

SOVIET RUSSIA

THE SECRET OF HER SUCCESSES



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to

Late Deep Narayan & Lila Singh

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FOREWORD

The heroic part played by the Russian people in the present conflict and the stupendous and almost unbelievable sacrifices made by them in resisting the mightiest aggression of the present age have created in India a desire to know all about the U.S.S.R. and its achievements. People wonder how a country, which, before the present war, was looked upon in many quarters with suspicion and misgivings, could acquit itself so valiantly in a fight which has taxed to the utmost even the resources of the British Empire. People are anxious to know the secret of this mystery and, in that sense, the present appears to be an appropriate time for the appearance of a treatise like the present one.

The book is a collection of articles by authoritative writers, who substantiate their statements by ample and convincing statistical data conveniently collected in a series of appendices. Mr. Hirlekar's skill lies in making a judicious selection of these articles, so as to throw clear light on many important directions of Soviet Russia's colossal efforts to put the country in the vanguard of social, political and cultural progress. The book affords a bird's eye-view of the revolutionary changes effected since 1928, when the U.S.S.R. began to plan for the future. During this short period, most profound and far-reaching changes in the economic, political and social life of the Russian people have been effected. The skill and intensity of this revolution have been more striking than anything witnessed elsewhere. As an observer remarked, after seeing the Soviet pavilion at the New York World Fair

of 1939, demonstrating the all-round progress made in Russia's national life. "Well, it just can't be true. But it is true."

The story of this revolution is as interesting as it is miraculous. There is hardly any department of human activity which has been left untouched by the Russian people's attempt to raise themselves. It is a triumph of planning, a lesson and a model for all backward countries like India. The lesson for India is obvious. There is a strong family resemblance between present-day India and Tsarist Russia in the misery, ignorance and poverty of the masses and in the contrast between the rich and the poor. In Tsarist time, speaking only of agriculture the most important department of human activity in India, the Russian peasants were poor, starved, illiterate and superstitious. The bulk of the land belonged to the Tsarist family, the monasteries and the landlords. A large number of peasants had no houses, no implements and their ploughs and harrows were wooden. Today the Soviet farmer leads the world in large-scale mechanised agriculture. Similar achievements have been made in industry, the development of internal resources, communications, labour, education and other departments of human activity. All the nations and races of the U.S.S.R., irrespective of their past and present condition and irrespective of their numbers, enjoy full and equal rights in all spheres of economic, public, political and cultural activity. Any direct or indirect restriction of the rights, or the establishment of direct or indirect privileges for citizens on account of their race or nationality or any advocacy of racial or national exclusiveness or hatred and contempt is severely punished by the laws of Russia. The result is that the large number of nationalities, once warring with one another for mutual destruction, now live in peaceful relations, despite differences of race, language, creed and civilization. Perhaps the most interesting feature of this development is that

it is all the result of the people's own planning under purposeful central direction, without the help of foreign credit or of foreign talent.

The Soviet Union, as is now commonly known, consists of 16 constituents, the Soviet Socialist Republics. Most of these include numerous autonomous units or smaller republics. Racial and national hostility, which was conspicuous at one time, has now been adjusted within the framework of the Soviet Union. Each national group has every facility for developing its own culture. Rapid industrial growth has emancipated Russia from foreign dependence and added immensely to its power of resistance to foreign aggression. The spectre of unemployment has been laid. There is no economic crisis in existence or in apprehension. Illiteracy, the frightful spectre of our times, has been killed and its place taken by an enormous growth of schools, universities and institutes, in all of which education is imparted free of charge. Soviet college students receive government stipends and, immediately upon graduation, secure employment in their speciality. As an American author remarks : "Imagine a Russian falling asleep twenty years ago and waking up today. He could not have recognized his country, his city or even his own home." An intensive unified construction programme has altered the old cities and created new ones. Perhaps the most remarkable achievement is that Soviet explorers, scientists, seamen and aviators have converted the Arctic region into a navigable seaway and are making immense areas within the Arctic circle habitable.

All this progress has been achieved in a country the dimensions of which are incomparably bigger than our own. Russia has the largest continuous territory in the whole world and occupies one-sixth of the earth's surface. With an area of

8,173,550 sq. miles. It is nearly three times as large as the United States, ninety times as much as England. It stretches from the Arctic Circle to Afghanistan and from Poland to the Pacific Ocean ; one end is only 45 miles from Alaska and another only nine miles from India. One short hop in an aeroplane from Gilgit will land the traveller on Russian soil in a few minutes.

The period occupied by this mighty revolution is comparatively brief. It began only in 1917 and is the outcome of three plans each durable for five years. At their end, the people have become the masters of the riches of the country, whose industrial output they have advanced to a first place in Europe and second in the world, second only to the United States. They have also become masters of their own lives. They have ended exploitation of man by man. They have eliminated class privileges. They have achieved economic security and political equality. They have brought about a great advance in science and culture. Crises, poverty, unemployment and destitution have disappeared. The First Five-Year plan started in 1928 and was completed early in 1932, a year ahead of the schedule. It enabled the U.S.S.R. to build a powerful industry to make the country industrially independent and well equipped for defence. Agriculture became a collective modern enterprise conducted on the largest scale in the world. It laid the economic foundations of a socialistic society. The Second Plan was completed in 1937. It eliminated all exploiting classes and abolished the causes for the exploitation of man by man. As a result, Russian society now consists of two classes friendly to each other, the workers and the peasants, united in a common cause. The line of demarcation between the two classes of the working people is becoming obliterated, as is also the line between them and the intelligentsia, who are engaged in mental labour for the benefit of the Soviet society.

The Third Five-Year Plan, 1938-42, laid the foundations for the completion of light industries and for the organization of transport, communication and defence of the country against internal crisis and external aggression.

From India's point of view, perhaps the most remarkable feature of the Russian constitution is, as stated above, the 16 constituents, each of which is a federation of numerous autonomous units—autonomous republics, districts and regions of the many peoples of the Soviet Union. By an extraordinary experiment in unification, they have been brought together and the antagonism, at one time observable amongst them, has been laid at rest. They are now working in friendly union, proud of the fact that they are all Russians and belong to Russia. Each constituent Republic is free to secede from the Union, but none has chosen to do so. All activities are conducted in the native language of the Republic. Racial and national hostility has been abolished and the law severely punishes any one guilty of fomenting racial animosity and discrimination. Women have equal rights with men in all spheres of life—economic, social, political and cultural. They are guaranteed full equality in work, payment for work, rest and leisure, social insurance and education and the right to vote and to be elected to office. All these achievements have been effected within twenty years, which is about the same period as the Gandhian movement had India at its feet and one-tenth of the period during which the British Government have had India in their control.

The question naturally arises : how has this miracle been made possible ? Is India ripe and free to receive the message of Russia ? The air in India is full of plans of reconstruction ; even Government is moving, though in a chaotic and bewildered manner. People of unquestionable sobriety and

sanity are pushing forward plans which, before the war, would have been sniffed at as fantastic and visionary. How did Russia achieve this miracle? Can we not do something similar? These questions every intelligent Indian is asking himself. There is hardly any department of human activity which has not been invaded by this curiosity. A short foreword like this cannot attempt to answer these questions, except briefly to say that, in Russia, the people met, left their differences aside and planned for the future. Are we willing and free to do likewise? This is the crux of the question. In attempting its solution, it may be of some help to know what an eminent American's estimate is of such achievements. 'We did not obtain freedom by requesting it on a postcard and receiving it on an engraved certificate. We fought for it.' That is the recipe, which enables the Russian to say to the world: "We are proud of our achievements and success. We face our future with confidence, building a peaceful life in friendly cooperation with other people. We are not afraid of any aggressive plans, from whatever quarters they may come."

Mr. Hirlekar's book contains a detailed description of this miracle. It should prove interesting especially to young Indians. The statistics, which the book supplies, will furnish data for the progress of our country in the several departments of our national activities. Most of the figures are tell-tale. There is no space to recall them in this foreword. But it must always be interesting to a young Indian to note the ways and means by which one hundred and seventy million people, held back by centuries of oppression, have built up a new joyous life. We should all feel grateful to Mr. Hirlekar for the trouble he has taken to unfold the secret of this mystery in a handy book easily available to us all. He is most fitted to do it by reasons of his travels, life-long interest and actual participation in the industrialisation of India. I am happy

to say that he has turned his knowledge and experience to good account. I wish him all success. The book will be particularly useful in enlivening us in these days of universal frustration, that is rapidly approaching its climax.

“Ashram,”

M. R. JAYAKAR.

Malabar Hill,

Bombay.

February 18, 1944.

INTRODUCTION

While I was visiting the West for the study of certain problems in which I was interested and for collecting necessary material thereon, my curiosity was aroused by the industrialisation of the Soviet Russia. I, therefore, tried to visit the country twice, once in 1925 and then again in 1939, but both the times I was refused the visa on my passports by the Soviet authorities, apparently because I wanted to visit their country as a student of current affairs and had not any party label attached to me. I was, therefore, forced to abandon the idea of the visit and satisfy my curiosity by collecting reliable information on the Soviet industrialisation from all available sources from outside that country, and I succeeded to a great extent in my efforts in that direction. Now, recently I have been associated with an institution devoted to the rapid industrialisation of India and the work of the planning and post-war reconstruction problems. This made me once again go through the material I had gathered during those two visits to Europe and America. I found the information very useful and brought it to the notice of leading personalities in Bombay keenly interested in the industrial and agricultural development of our country. When I found wide appreciation of this information about the Soviet Russia, I thought it advisable to edit the material and add to it some facts and figures to bring the story up-to-date for the information of the people of our country who would like to benefit from the experience of others.

While in U.S.A., I visited the Soviet Pavilion at the New York World Fair in July 1939. The visit was an education

in itself. Here is what an American writes and I am entirely in agreement with him :—

“ If you are one of the privileged persons who has had the good fortune to visit the Soviet Union you have indeed seen the future and seen it work. Perhaps you have had a glimpse of the achievements of the Soviet Union at the magnificent Pavilion at the New York World Fair. In either event, your eyes have opened on a new world, a world covering a sixth of the earth's surface, where 170,500,000 people, held back by centuries of Tsarist oppression, are building a new, joyous life.”

Here is what another American said about the Pavilion which is very interesting :

“ Well, it just can't be true. But it is true. And I can testify that those detailed and graphic exhibits in the Soviet building correspond very closely to what I myself saw in the Soviet Union only a year ago.”

The visit to the Pavilion was so interesting and instructive that one could get a better idea of the U.S.S.R. from the Fair exhibits than from ten years' study of books and newspapers. The visitor could feel that he was actually moving in that vast country, breathing the invigorating atmosphere, and seeing the mighty achievements that Soviet Russia had to her credit, during the brief period of the past twenty years.

Considering the vast extent of the lands of the U.S.S.R. it is difficult for a student of Russian problems to study them even by a visit to the country. This exhibition had, therefore, the particular advantage of presenting with facts, figures, charts, models, etc., the various aspects of the Russian experiment in a nutshell and thus focussing the attention of the

student on problems which would, otherwise, have missed the notice of the visitor to the country. Hence, the book opens with a chapter on "U.S.S.R. in Miniature."

Some of the material written in 1939 by the authorities in their respective subjects in Soviet Russia for the visitors of the Soviet Pavilion is in print abroad and I have, therefore, taken every care to sort out and present it from the proper perspective and from the Indian point of view. By the addition of other material gathered from the files of the daily newspaper the "*Moscow News*" and from the "*Soviet Russia To-day*" and others I have tried to bring it up-to-date as far as possible. In doing this no efforts have been spared and even the question of expense had, during the several months' work on the book, never acted as a brake on them. In the collection of the material, a visit to Delhi proved fruitful and a journey to Kabul, the seat of Soviet legation and cultural organisation, was projected for the same purpose but passport difficulties were again a great handicap and it had, therefore, to be abandoned. Hence, I would consider the object of this publication served if it gives an insight into the secrets of the economical and cultural development under the Soviets to which are due the colossal Russian successes in this war.

The most striking feature of the reconstruction of the Russian Nation after the last World War when she had just emerged out of her internal troubles—the revolution and the civil war—was the tackling of the problem of education of the masses in all its aspects. For, the founders of the new regime were perfectly aware of the fact that no progress could be possible or sustained on a permanent basis unless the lowest strata of the population intelligently followed the events and participated in the development and reconstruction programmes of the nation. Hence, liquidation of illiteracy was the first

and foremost item in their plan. Within a span of two decades the percentage of literacy shot up from about 29% to 82%.

Realising that a high percentage of literacy was not the only and the true index of the progress of education, the spread of higher education on a large scale in art, science, commerce and industry was simultaneously planned and general and higher education was imparted. This education drive was on all fronts and was not restricted to only boys and girls but also to adults both men and women in industry, agriculture and in other technical as well as non-technical spheres without any discrimination of caste and creed. This is amply revealed by the figures given in the appendices.

The industrialisation of the country was another big project undertaken by the Soviets. As a preliminary to this, a geological survey of the vast stretch of land was made by organising hundreds of expeditions of scientists, professors, students and industrial experts to find out the natural resources and the industrial possibilities out of the raw material for which they need not look to any other country. This survey work is still continuing in spite of distractions and bloodiest struggle that is raging on the Russian soil nearly for the last three years. The survey so far made has revealed that Russia is the richest country in the world in natural wealth, the region of the Urals alone containing 300 minerals and 12,000 deposits.

The geological survey was accompanied by industrialisation on an unheard of scale. The construction of electrical power stations all over the country was undertaken which helped the growth of heavy and basic industries such as iron and steel, non-ferrous metals, machine buildings, chemical industry, automobiles, agricultural machinery, paper etc. The

gigantic development of electric power stations will be clear from the fact that the electric power production rose from 1.9 in 1913 to 39.6 billion K.W. Hrs. and the industrial production from 100% in 1913 to 908% in 1938. How the face of industrially backward Tsarist Russia was completely changed can be seen from the table given on page 30 and from the appendix I relating to National Growth resulting from Five-Year Plans. Today the successes on battlefields have convinced even the one-time critics of Soviet Russia that she is one of the leading industrial countries of the world perhaps second to U.S.A.

Between 1917 and 1921 there was no stable Government as the Revolution was followed by the Civil War and foreign intervention and the country had, therefore, to go through political chaos and devastation. It took about seven years (1921-28) for the Soviet Government to raise this production to the pre-war (1913) level and to recover from the effect of 1914-18 war and subsequent upheavals.

The First Five-Year Plan was put into operation in 1928 but due to the nation-wide drive behind, it practically materialised within four years. The Second Five-Year Plan was initiated in 1932 and the Third in 1938, which completed only three years when the present conflict between Russia and Germany started. Thus, the real achievements in economic, industrial, agricultural, educational and social spheres were the work of the three Five-Year Plans spread over a period of thirteen years only. The statistics (*vide* appendices) will give abundant evidence of the truth of this statement.

It is clear from the statistics of industrial output that the land of the Soviets had increased its production more than nine times within the period of the two Five-Year Plans. In this connection it is interesting to note that England and

France required a span of 80 years (1860 to 1938) to increase their respective industrial production not more than three or four times, while the new country of the United States registered twenty-fold increase in half a century (1880 to 1929)—a rate of progress for which Germany took 80 years (1860 to 1938).

. The mechanisation of agriculture in Soviet Russia demonstrated by facts and figures in the third part of this book and the statistics appended, is unique and unrivalled in the history of the world.

In 1913 Russia stood fifth in the world in the production of agricultural machines and in 1937 she was second to the United States. The manufacture of tractors and harvestor combines did not exist at all in pre-world war period while in 1937 she stood second and first in the respective production of these machines in the world. Collectivisation of farms, introduction and innovation of science and scientific methods in increasing the agricultural produce and livestock breeding to the highest possible pitch, are some of the main factors, which raised the standard of living of the peasants and enabled to a certain extent to pay for the capital goods and machinery she had to import at the beginning. The credit therefore goes wholly to the Government of Soviet Russia for being the first in the field to industrialise agriculture on a vast scale and according to a well thought out plan of development. Ample facts and figures given in the chapter dealing with the various aspects of agriculture and the tables given elsewhere in the book corroborate this statement and bring home to the reader the importance of the planning enforced by Soviet Russia on a vast and gigantic scale not only in agriculture but also in industrial and other spheres. This is really the secret of her colossal strength amply demonstrated in the present war.

There is a great resemblance between the conditions prevailing in Russia before 1917 and in our country today. As said before, the writer had not the privilege of visiting Soviet Russia but was fortunate in extensively travelling from the Atlantic to the Pacific coast of the United States which is the richest and the most industrially advanced country of the world. During these travels, a mental comparison between the conditions in the two countries was inevitable and along with it came the sense of universal frustration that is reaching its climax everywhere in our motherland. India, a land so rich in mineral wealth and natural resources as the U.S.A. or Soviet Russia or in the metaphorical sense a country flowing with milk and honey, should be steeped in appalling poverty and ravaged by famines, is proof positive if any were needed that there is "something rotten in the state of Denmark."

If this book creates a spirit of inquiry and earnest desire to learn more about Russia by first-hand knowledge than through books written by foreigners with selfish motives from different perspectives, one of the purpose of this book can be considered as achieved. More contact with the Soviet Russia, a neighbouring country so much industrially advanced in an amazingly short period of about twenty-one years, would be profitable in the reconstruction of post-war India. Few people realise that only a hop by aeroplane over Gilgit (Kashmir) will, without the necessity of crossing any other foreign country, bring you in the land of the Soviets. A perusal of the book, it is hoped will forcibly suggest to the powers-that-be in our Universities the immediate necessity of arranging a cultural exchange of professors and scholars with the Soviet institutions. In our educational curriculum, the study of Russian may well occupy the same position as that of the French and German languages. Russians have been great Indologists themselves and in the cultural exchange suggested

above India will discover herself as no mean contributor and thus recognise her true self rising to her fullest and most imposing stature.

It is expected that this publication will be an incentive to probe into the secrets of the Russian successes, which has amazed the mankind of the world and won admiration for the Soviets from all quarters. Further, it will be a useful guide to all those who are seriously engaged in the post-war reconstruction problems and rapid industrialisation of our country.

In spite of every care, drawbacks and shortcomings in respect of uniformity in maintaining either English or American mode of spelling and misprints, would be only visible to a careful reader. It should be borne in mind that the articles are written by various authors and I am aware of the somewhat undue repetition and overlapping during its first three chapters and the real unfolding of the main topic of the book begins with the fourth chapter. If there is not found natural flow of language or expression the original translations are responsible and the reader is kindly requested to be indulgent towards such shortcomings. Any suggestions that could be made use of in subsequent editions would be welcome.

While editing this book I received valuable suggestions and help from my friends interested in the question of National Planning and I may particularly mention the names of Mr. S. N. Haji, B.A. (Oxon), Bar-at-Law and Mr. G. B. Jathar, I.E.S. (Retd.), Principal, Khalsa College, Matunga and Mr. J. M. D'Souza of the *Free Press Journal*. I have to thank Mr. P. Gladyshev, Russian Tass News Agency representative at New Delhi, who kindly loaned me one of the most valuable publications on Soviet Russia—"An album illustrating the State

"Organisation and National Economy of the U.S.S.R.", published by the Scientific Publishing Institute of Pictorial Statistics. I have also to thank Mr. V. R. Bhadkamkar who kindly supplied the paper for publishing this book. The credit for the design of the cover page and preparation of the four maps incorporated in the book goes to Mr. S. N. Kamat of the Commercial Section of Sir J. J. School of Art, Bombay.

I should not fail to express my gratitude to Mr. M. L. Dahanukar, President, Maharashtra Chamber of Commerce, whom I met incidentally at Geneva when he pressed me to accompany him to visit the New York World Fair, while I had planned to visit some other countries of Europe. And the book is the outcome of this visit.

My thanks are particularly due to the Rt. Hon'ble M. R. Jayakar who, inspite of his multifarious activities, readily accepted to write a foreword to this book and thus to appreciate my modest effort at bringing a knowledge of Soviet successes in National Planning within easy reach of our people.

"Vindavan," Dadar,
Bombay 14,
14th February 1944.

K. S. HIRLEKAR.

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U.S.S.R. IN MINIATURE

1. Double that of Paris Exhibition.
2. It is not propaganda.
3. Ready to meet aggression.
4. What it contained.
5. Abolition of illiteracy.
6. Science.

All one could say about the Soviet Pavilion at the New York World's Fair, dedicated to "The World of Tomorrow", on 17th May 1939 is that it would have knocked your eye out. At the Paris Exposition in 1936 the Soviet exhibits practically overwhelmed their competitors and very much the same thing happened on Flushing Meadow (New York). The structure was far superior to what the Russians had at Paris and it was miles beyond anything at New York.

"When I was in Moscow several years ago, I thought I had a notion of what these fabulous people could do but this World's Fair business beats everything", wrote Robert Forstythe in the magazine "Soviet Russia To-day", of New York. The ordinary building at a Fair was made of papier mache, asbestos and stray bits of baling wire, but these exalted Moscovites had transported a gigantic marble and stone structure from the banks of the Moscow to the rim of Flushing Creek ; most of it had come by way of the Northern Passage through the Arctic Circle. They worked the whole plan out in the Soviet Union, assembled the material, marked it, shipped it and then put it back together when it reached America. Talk about organization, foresight and workmanship ! There wasn't anything on the grounds that exceeded it and this referred even to such exhibits as the great industrial shows of American firms.

In the centre of the court of the Soviet pavilion, formed by its wings, rose a pylon, topped by the figure of a worker bearing aloft a ruby star. The over-all height of the pylon and the statue was 259 feet. The star was a replica of the five-pointed stars on the Kremlin. The shaft of the pylon was of porphyry, a soft rose color below merging into a rich deep-toned red above. On the pylon was the great seal of the U.S.S.R. wrought in granite. The statue, which was the work of the Soviet sculptor, Viacheslav Andrejev, was of stainless steel. This simple, strong figure of a worker, so confidently striding forward, embodied the whole meaning of the Pavilion. He is a young man and represents the new type of human being, capable of both physical and mental labor, produced by Soviet socialist epoch.

The Soviet Pavilion at the New York World's Fair was more than twice as large as the Pavilion at the Paris Fair in 1937. This made it possible for the Soviets to give a picture of the economy and culture of the peoples of the land of socialism, to show what had been accomplished during the Stalinist Five-Year Plans, and to explain the structure of the Soviet society and Government.

Returning from a visit to the Soviet Union more than a decade ago, Lincoln Steffens said, "I've seen the Future—and it works!" Nevertheless, it has taken years for his fellow-countrymen (Americans), the victims of vicious propaganda, to rise above prejudice, to overcome fear, and to look dispassionately at the Soviet Union, to see how a great people like ourselves (Americans) throwing off the yoke of oppression, emerging from revolution and civil war, are working out their destiny in the World of Tomorrow.

The art, the ingenuity, the skill with which each exhibit had been conceived, designed and executed was surprising

even to the visitor who had been to the Soviet Union within recent years, and had endeavoured to follow its dazzling development.

2. The massive model, of semi-precious stones, of the "Palace of the Soviets ;" the large animated maps of the U.S.S.R., its highways, its cities and its collective farms ; the three-dimension action models of the vast canal and power systems ; the ingenuous reproduction, in actual size, of a section of one of the subway stations in the palatial Moscow Subway, the illusion of the tubes with approaching and disappearing tracks ; these were a few of the extraordinary exhibits in the Soviet Pavilion, which, to those who came to scoff, would be "wonderful propaganda". But many who came to scoff left with a feeling that they had seen into the Future, and honesty would compel them to say : "It seems to work !"

The palpable and imposing form in which the facts—immense natural resources of Russia and the social uses to which they were put—alone had much to open the eyes and the mind of every visitor and to dispel the fog of misunderstanding and prejudice through which he was accustomed to look at Soviet Russia.

Even in this great World's Fair, remarkable for the beauty, variety and architectural excellence of its foreign pavilions, the Soviet Pavilion stood a monumental example of labor as "a matter of honor, a matter of glory ; dramatic, stimulating, exciting.

At the dedication ceremony, Commissioner Herman Tikhomirnov, representing the Soviet Government, declared that in the land of socialism "each citizen looks ahead with confidence, for he knows that the Stalin Constitution guaran-

tees him work, education, leisure, and security in illness and old age."

3. "We show you the reality of life in the Soviet Union," continued Mr. Tikhomirnov. "We are proud of our achievements and success; we face our future with confidence, building a peaceful life in friendly co-operation with other peoples; we do not fear any aggressive plans, from whatever quarter they may come"... "After going through the Pavilion, you may become acquainted with the life of the Union of Soviet Socialist Republics, with the life of the 170 million people of our great fatherland."

On behalf of the United States Government, Edward J. Flynn, United States Commissioner General, while paying tribute to the Soviet Union for her accomplishments, remarked: "This Pavilion stands as something of a monument to your technical accomplishments of the past two decades, and as a reminder of the great strides that have been taken towards industrialization of the Soviet Union during that period."

In the dedication ceremony, La Guardia, Mayor of New York, paid the highest compliment and said: "The Soviet architects deserve the highest praise for the beautiful conception and design of this building. I believe that in your exhibition here the opportunity will well present itself to show to the American people what has been accomplished by a young Government in an old country."

"After all, our own country, our own concept of government, was the result of a bloody revolution. We did not obtain freedom by requesting it on a post card and receiving it on an engraved certificate. We fought for it. And you know, Mr. Ambassador, our young republic was not so very popular with the dynasties of Europe at the time."

Coming to the description of the Pavilion.....

4. In the entrance *Lobby of the Pavilion*, a large jewel map (on a wall) lettered with diamonds, rubies and other stones, showed the industrial expansion of the Soviet Union, occupying one-sixth of the earth's surface, during the past decade covered by the First and Second Five-Year Plans of socialist construction.

The exhibits in the *Hall of Socialist Economy and Labor* traced the constant growth of planned socialist industry, which has never had, and by its nature precluded, economic crises and unemployment ; and which had won first place in Europe, and second in the world in volume of output.

The industrial section depicted the growth of Socialist industry to a point where it produced nine times as much as the industry of Tsarist Russia. Here it could be seen that in the total *production of large-scale industry the Soviet Union holds first place in Europe, and second only to the the United States in the world line-up.*

The abolition of unemployment and new methods of labor (Stakhanovite methods) have assured the growth of the national economy, and have made labor in the Soviet Union, as Stalin put it, "a matter of honor, glory, valour, and heroism."

The changes in the countryside were shown by a diorama of similar proportions and ingenuity. A rural district appears as it was in pre-revolutionary times. The land was fenced into tiny farms, tilled with wooden ploughs. There was the old village with its draggled streets, its single brightly lit building, the saloon. The landlord's mansion stood splendid and aloof.

Then all this disappeared. A large collective farm emerges, worked with tractors and combines. A modern kindergarten had replaced the saloon. The landlord's mansion had been converted into a sanatorium for the kolkhozniki (Collective farmers).

In the section "*Transportation and Electric Power*" it was strikingly demonstrated amongst other exhibits how the man who not so long ago pushed a wooden plough now flew on an aeroplane over the Pamirs.

The Hall of *Culture and Rest* illustrated beautifully the health work of the nation. One saw pictures of health centres and heard that there were 26,927 such centres serving the people. One saw models of sanatoria where workers rested, on the seashore or on the mountains. One saw that the number of medical schools had increased from 13 in 1913 to 71 in 1937, that 107,000 students were enrolled in these schools, and that the number of doctors had increased from 20,000 to 132,000. The budgets had reached enormous figures : 10.3 billion rubles for health, 6.8 billion for social insurance.

In the Hall of *Culture and Leisure* one exhibit contained models of airplanes and ships made by the Soviet children who held four out of the six world records for airplane model builders.

5. One section in this hall told the dramatic story of the abolition of illiteracy and the enormous growth of schools, universities and institutes, in all of which education was imported free of charge. Soviet college students receive Government stipends, and immediately upon graduation are certain of employment in their speciality.

The section of *Socialist City Planning* was very impressive. Imagine a Russian falling asleep twenty years ago and waking up today. He could not have recognized his country, his city or even his own home. An extensive, unified construction program had altered old cities and created new ones.

Other exhibits show how this vast rebuilding and creation of urban centres is integrated with the planned, economic development of the U.S.S.R. They tell how slums have been abolished ; how proportions are maintained between industrial and residential sections ; and how the daily life of the people has been altered by large building projects, including new homes, nurseries, kindergartens, schools, universities, institutes, theatres, cinemas, and sport stadiums.

6. In the Hall of *Science, Literature and the Press*, an exhibit describing the activities of the Academy of Sciences, the highest scientific body in the U.S.S.R., shows the close interdependence between research and the economic development of the country, whose natural resources are explored, whose soil is made more fertile, and whose people are made healthier with the aid of the Soviet scientists.

In the book section one gathered the impression that "a village which possessed a library was a rarity in Tsarist Russia. A village without a library is a rarity in the U.S.S.R." Of particular interest among the children's books was one describing how to make models of toy aeroplanes, submarines, etc. which ran to a printing of several hundred thousands.

The *Soviet Pavilion of the Arctic* demonstrated how Soviet explorers, scientists, seamen, aviators and workers

have converted the Arctic into a navigable seaway, and are making immense areas within the Arctic Circle habitable.

Coming down the steps of the beautiful Soviet Pavilion, a visitor remarked to his friend : "*Well, it just can't be true. But it is true. And I can testify that those detailed and graphic exhibits in the Soviet building correspond very closely to what I myself saw in the Soviet Union only a year ago.*" From it one could get an idea of the new Soviet Russia that one could not have got from a dozen books, or a thousand newspapers.

MODERN RUSSIA AT A GLANCE

1. Land of Riches. 2. Social progress. 3. Planned economy. 4. Democracy. 5. Large-scale agriculture. 6. Industry—first in Europe. 7. Economically independent. 8. New Cities. 9. Care of Expectant mothers. 10. Literacy.

What used to be called Russia is today called the Union of Soviet Socialist Republics. It has the largest continuous territory in the world ; it occupies one-sixth of the earth's surface, and has an area of 8,173,550 square miles. It is nearly three times as large as the United States, ninety times as large as England. It stretches from the Arctic Circle to Afghanistan, from Poland to the Pacific Ocean. One end is only fifty-five miles from Alaska, another only nine miles from India. Its population of 170,467,186 is the third largest in the world.

The Soviet Union has every type of climate, from the Arctic climate of the north to the temperate and sub-tropical climate of the south. Its animals vary from polar bear to tiger, its plants from Arctic moss to citrus fruits, tea and cotton. Between these extremes lie vast fertile plains, long rivers, lofty mountains : lands rich in natural resources, teeming cities, industrial centers, prosperous kolhozes (collective farms). Land of Great Change.

By man's deliberate will, the entire country has been changed since the great October Socialist Revolution of 1917. The people have become the masters of the riches of the country, whose industrial output they have advanced to first place in Europe and second in the world, second only to

the United States. They have become masters of their own lives. They have ended exploitation of man by man. They have eliminated class privileges. They have achieved economic security, economic and political equality; they have brought about a great advance in science and culture. Crises, poverty, unemployment and destitution have disappeared.

With the transformation of the social order the very face of the land has been changed. The new rulers of the land, the people themselves, have transformed Russia from a place of stagnation and decay to a place of surging growth and progress in every field. New gigantic industries, unknown in the old Russia, have been created. Old cities have been reconstructed and 230 new cities have been built. Modern towns now rise above the icy wastes of the Arctic, the taigas of Siberia, the deserts of Central Asia. Cotton now blooms in former wastelands of Central Asia, and even as far north as the Ukraine. Through new varieties originated by Soviet scientists, wheat and vegetables now grow within the Arctic Circle. Moscow is no longer an inland capital; canals unite it with the open sea. In remote regions like Karaganda in the Kazakh steppes and Kuznetsk in Siberia, the earth has been made to yield vast new stores of minerals. Aviation has conquered time and space, bringing the peoples of this extensive land closer to each other and to the world.

Vast areas have been explored and added to the map—the greatest enlargement of the habitable earth since the discovery of the Americas and Australia. The Arctic territory now being developed has an area equal to the European part of the U.S.S.R.

For the first time and on the largest scale in history, the Soviet Union is harnessing the forces of nature by scientific planning for the service of all.

By man's deliberate will, man himself has been changed. A great people held back by centuries of Tsarist oppression now stand in the front rank of modern civilization.

1. In the Soviet Union, the rapid development of knowledge and of economic power go hand in hand. Yearly scientific expeditions have discovered that the country's natural resources exceed all previous estimates.

Even today, the U.S.S.R. is far from having been completely explored, and the data already accumulated shows that it occupies the first place among the countries of the world in deposits of oil, iron ore, phosphate, potassium salts, manganese ore, peat, gold and platinum, and second place in coal deposits. By 1934 all the elements known to man had been discovered within the country.

Oil deposits in Tsarist Russia were calculated at about 850,000,000 tons. By 1937, new findings under the Soviet Government had brought the figure for geographical deposits up to 6,376,000,000 tons. The proved oil deposits are 3,877,000,000 tons, or 55 per cent of the world's proved deposits. Dozens of new oil fields have been discovered and put into exploitation in Azerbaidjan, Grozny, the Maikop-Region, Dagestan, Emba, Bashkiria, the Volga region, the Ukraine, Central Asia and the Perm district.

According to the latest data, the U.S.S.R. has practically as much iron ore underground as the rest of the world put together. Its deposits of potassium salts supplying chemical fertilizers for agriculture are five times as great as the world's supplies outside the Soviet Union. Supplies of apatite at Khibin are practically inexhaustible. The Ural mountains are fabulously rich in minerals and precious stones, and undreamed of wealth is being located and procured in the once-

blank spaces of the Arctic, the high Pamirs, Siberia, the Kara Kum desert and the Tien Shan Mountains.

Until 1917, most of this great wealth lay locked in the earth, undiscovered and unused. But the Soviet Government have unloosed the mighty productive resources of the land, its rich earth and rivers and forests, its iron and coal and precious minerals, and utilized them throughout Soviet industry and agriculture to raise the living standards of the people.

As regards rate of growth, the socialist industry holds first place in the world. Compared with 1913 Soviet industry has grown 908.8 per cent.

The natural resources of the U.S.S.R. are vast enough to insure steady progress in the country's economic development for an indefinite time.

2. The Soviet State came into being in November 1917 (October, old style), as a result of the socialist revolution of the working class in alliance with the poor peasants, headed by the Bolshevik Party and its great leaders, Lenin and Stalin.

All power in the U.S.S.R. belongs to the toilers of town and country as represented by the Soviets of Working People's Deputies. The land, the waters, mineral deposits, forests, mills, factories, railways, water and air transportation, credit and banking institutions, means of communication, state farms, machine and tractor stations, the housing in the urban and industrial centers are the property of the whole people.

Under tsarism, ten per cent of the population—capitalists, landlords and rich peasants—received eighty per cent of the national income. In the U.S.S.R. the whole of the national income goes for the benefit of the whole people. Today, 99.97 per cent of the output of all Soviet industry

is produced on a socialist basis ; and 99.4 per cent of the grain acreage is cultivated by kolhozes (collective farms) and sovhozes (State farms). The annual income of the vast majority of the people has greatly increased, their living and cultural standards raised to levels undreamt of in the old days.

3. All economic activity in the U.S.S.R. is based upon a single general plan of national economy in the shaping of which the people participate. All industrial, commercial, social, agricultural, and educational enterprises work in accordance with a plan which they undertake to carry out within a given period. Every planned task is an integral part of the general Five-Year Plan covering the whole of the national economy. Socialist planned economy has eliminated economic depressions, has abolished unemployment.

The first Five-Year Plan, started in 1928, and completed early in 1932, a year ahead of schedule, enabled the U.S.S.R. to build a powerful industry, to make the country industrially independent and well equipped for defence. Agriculture has become a collective modern enterprise conducted on the largest scale in the world.

The First Five-Year Plan laid the economic foundations for a socialist society ; the Second, completed in 1937, eliminated all exploiting classes, abolished the causes for the exploitation of man by man. According to Viacheslav Molotov,

“Socialism, the first phase of Communism, has in the main already been built in our country. Our society now consists of two classes, friendly to each other, of workers and peasants, united in a common cause, the cause of building Communism. The line of demarcation between the two classes of the working people of the U.S.S.R. is

becoming obliterated more and more, as is also the line between these classes and the intelligentsia, who is engaged in mental labor for the benefit of Soviet society."

The Third Five-Year Plan (1938-42) laid the foundations for the completion of light industries and for the organization of transport, communication and defence of the country against internal crisis and external aggression.

The Soviet Union consists of eleven constituent Soviet Socialist Republics ; Russia, itself a federation ; the Ukraine, Byelorussia, Azerbaidjan, Armenia, Georgia, Turkmenia, the Uzbek SSR, the Tadjik SSR, the Kazakh SSR and Kirghizia. Most of these Union Republics include numerous autonomous units—autonomous republics, districts and regions of the many peoples of the Soviet Union. The Republics have equal rights. Each constituent Republic is free to secede from the Union. All activities are conducted in the native language of a Republic.

Racial and national hostility have been abolished in the U.S.S.R. The law severely punishes anyone guilty of fomenting racial animosity or discrimination.

Within the socialist framework of the Soviet Union, each national group has every facility for developing its own culture. Following the policy outlined by Joseph Stalin more than two decades ago, the U.S.S.R. has given full opportunity for the economic, social and cultural development of all the nationalities of the Union. The cultures of the various peoples are, in Stalin's phrase, "national in form, socialist in content."

4. The word soviet means council. It appears in the name of the U.S.S.R. and the various Republics because the political unit on which the country is based is the soviet, or

council of the working people ; because these soviets, democratically elected, are the governing bodies of the country, from the local soviets to the Supreme Soviet of the U.S.S.R. The highest body of authority is the Supreme Soviet of the U.S.S.R., which exercises legislative power. One chamber of this body, the Soviet of the Union, is elected by the citizens of the U.S.S.R. on the basis of one deputy for every 300,000 inhabitants for a term of four years. The other chamber, the Soviet of Nationalities, consists of deputies elected directly by the citizens of the U.S.S.R. from the constituent and autonomous Republics and local autonomous bodies. Each Union Republic is entitled to twenty-five deputies ; each Autonomous Republic to eleven ; each Autonomous Region to five ; and each national area to one. The two chambers have equal right to initiate legislation.

All citizens, eighteen years old and over, have the right to vote for deputies to the Soviets and to run for office.

Women have equal rights with men in all spheres of life—economic, social, political and cultural. They are guaranteed full equality in work, payment for work, rest and leisure, social insurance and education, and the right to vote and to be elected to office on equal terms with men.

In the Soviet Union there are no capitalists, landlords, merchants or usurious peasants (kulaks). The whole able-bodied population is engaged in useful work or study in industry, agriculture, professions or the arts. The best people of the Soviet Union, known throughout the country for outstanding achievements or heroic acts in all these fields, are nominated and elected to the Supreme Soviet of the U.S.S.R.

To strengthen the socialist society, the Constitution of the U.S.S.R. guarantees citizens the rights of free speech, free press and free assemblage. These rights are ensured under

Article 125 of the Constitution by placing at the disposal of all the workers (industrial, office and professional) and all the farmers and their organizations, printing presses, supplies of paper, public buildings, the streets, the means of communication and other material requisites for the exercise of these rights.

The Soviet Union has introduced and developed many new democratic forms. Democracy in the U.S.S.R. begins at the points of immediate concern to the citizen—where he works, through shop meetings and wall newspapers, where he lives, through tenants' meetings ; at the children's camps and schools, where parents assist in the activities ; in economic management and policy, through workers' discussions of economic plans ; in the expansion of production and the improvement of quality, through the Stakhanovite movement and production conferences ; on the kolhozes (collective farms), where the kolhozniki plan their activities and choose the farm management themselves ; in the 'distribution of goods, through the consumers' co-operatives ; in civic affairs, through workers' brigades which inspect stores, schools, restaurants and housing ; in the administration of the huge social insurance funds, through the trade unions ; in culture and art, through the numerous cultural organizations, groups and clubs in the factories and on the kolhozes ; in political life, through meetings and elections which range from local administrative bodies to the Supreme Soviet of the U.S.S.R. Soviet citizens exert direct influence on public affairs through access to newspaper columns, through regular worker and peasant correspondents and through communications to editors and public officials.

All these democratic forms are implemented. Decisions of parents', tenants', workers' and farmers' meetings are carried into effect."

5. Of all the fundamental changes which the Soviet Union has effected, the transformation of agriculture is one of the most extraordinary. In Tsarist days, millions of Russian peasants wore rags ; they starved, and were kept illiterate and superstitious. Most of the land belonged to the Tsar's family, the monasteries, the landlords and kulaks—grasping peasants who became rich through exploiting the labor of their poorer neighbours and through usury. The word kulak means literally "first", and expresses the contempt of the people for these exploiter elements in the rural districts.

Prior to the Revolution, thirty per cent of all peasants had no horses ; thirty-four per cent no implements ; more than fifteen per cent were landless shepherds tending the flocks of the landlords and kulaks. The peasants' tools were ten million ploughs of which eight million were wooden, and seventeen and a half million wooden harrows.

Today the Soviet farmer leads the world in large-scale mechanized agriculture.

A kolhoz (collective farm) unites farmers on the basis of common means of production and organized labor performed in common, with the farm's income distributed in accordance with labour performed. The kolhoz is equipped with the most advanced agricultural technique and science.

Eighty per cent of the tillage and harvesting on the kolhozes is done by Machine and Tractor Stations—Government enterprises which help the kolhozniki cultivate their land at very low cost. There are now 6,350 Machine and Tractor Stations. Soviet agriculture in 1938 used over 483,500 tractors and 153,500 harvester combines. The cash income of the collective farms was over 14,000,000 rubles in 1937.

The average amount of grain received per collective farm household in the grain-growing region rose over one

metric ton (2,200 lbs.) in 1933, to over 2.3 metric tons in 1937, exclusive of seed, emergency seed stocks, fodder for the collectively-owned cattle, grain deliveries and payments in kind for work performed by the machine and tractor stations. In addition, the kolhozniki had the produce of their personally owned cattle and plots of land. The 18,800,000 kolhoz households are prosperous and culturally advanced. For them as for the workers, hunger, poverty and ignorance are ended forever.

6. Tsarist Russia imported most of its machinery from abroad. It had no automobile or aviation industry; it manufactured no tractors or harvester combines. *Today the Soviet Union's industrial output is over nine times as great as that of Tsarist Russia. It ranks first in Europe, and second in the world in the gross output of industry.* Soviet Industrial output in large-scale industry was valued at 100,375,000,000 rubles in 1938, compared with 11 billion rubles in 1913.

Industrial transformation has touched every product, every aspect of life—local and oil, electric power and railways, water transportation and airways, clothes and radio, city and village.

Entire new industries have been created, among them being non-ferrous metallurgy, synthetic rubber production, chemicals, automobiles, tractors, harvester combines, aviation, precision instruments and machine-building. Vast new industrial centres have been established throughout the country, such as Magnitogorsk in the Urals; Kuzbas in Siberia; the chemical industry on the Kola peninsula; Stalingorsk near Moscow; the copper smelting plants on the shores of Lake Balkhash, etc.

7. The U.S.S.R. is an economically independent industrial power. Socialist industry accounts for 99.7 per cent of

the total industrial output ; private industry for only 0.03 per cent.

From 1933 to 1938, the national income of the U.S.S.R. rose from 48,500,000,000 rubles to 105,000,000,000 rubles ; its annual pay roll from 34,953,000,000 rubles to 96,425,000,000 rubles ; the average annual wage of industrial workers from 1,513 to 3,447 rubles. At the same time there has been a proportionate increase in the defence capacity of the Soviet Union, ensuring its power to repel any foreign aggressor and to contribute effectively to international peace.

The workers employed in these industries, as all employed persons in the Soviet Union, are protected in their conditions of work by the most thorough going labor code in the world. The powerful Soviet trade unions, in which 24,000,000 industrial, professional and office workers are organized, administer social insurance funds and see to it that the elaborate system of labor protection, safety devices and general healthful conditions of work are rigidly observed. The unions exert a tremendous influence in raising labor productivity. Through them the workers realize their social and cultural needs, and exert democratic control over their own conditions of life and labor. The initiative of the workers has found expression in the Stakhanov movement which, by improved methods of work, devised by the workers themselves, has greatly raised labor productivity and workers' incomes.

8. Tsarist Russia was notorious for its poor housing, wretched streets. The Soviet Union has built 230 new cities around various industrial enterprises, and reconstructed its old cities. Some of the new cities are : Zaporozhye, built around the hydroelectric station on the Dnieper River in the Ukraine ; Kirovsk, beyond the Arctic Circle, the modern town around the automobile plant at Gorky ; Monchegorsk, built

around the gigantic copper smelting plant on the peninsula. In the midst of the Siberian forests has arisen Komsomlsk, built by young men and women who chose to participate in this great pioneering adventure. In the Arctic Circle is the new port town of Igarka, at the mouth of the Yenisei River.

9. In the Soviet Union, care of the child begins before its birth. Expectant mothers are granted leave from work with full pay for thirty-five days before and twenty-eight days after childbirth, and complete medical care, before, during and after childbirth. They enjoy the facilities of rest homes and sanatoria without charge. During the hours when a Soviet mother is working or studying, the child may be kept in a day nursery or kindergarten.

In 1937, a total of 1,800,000 children were accommodated in permanent nurseries and kindergartens and 5,700,000 in seasonal ones. In bright, spacious rooms, the children have their own little white beds, tables and chairs. Experienced attendants carefully dress and undress the youngsters, feed them, play with them, take them out of doors, put them to bed. When the working day is over, the mother comes for her child. Nurses and doctors in charge explain how to continue the proper care of the child at home. These pre-school institutions train mothers as well as children.

Those who keep children entirely at home may obtain help and advice from Consultation Clinics on the care of children.

The health of Soviet children is guarded by a large army of scientists in scores of Government institutes and laboratories.

In 1937, the Government spent more than 4,000,000,000 rubles in taking care of the health of mothers and children.

As a result of such care, infant mortality has dropped 50 per cent from the pre-war level.

At the age of eight the child who has already received training in nurseries and kindergartens starts school.

Before the Revolution, only 7,800,000, or one fourth of Russia's children, attended school. The Soviet Union has universal compulsory, elementary education. Now about thirty-four million children attend school. Between 1933 and 1938 over 20,000 schools were built, 4,254 in urban and 16,353 in rural localities. Millions of copies of children's books have been issued in many languages of the U.S.S.R.

Talented children are carefully nurtured ; gifted young poets, musicians and inventors are given every opportunity to develop their natural endowments in school and in special institutes and organizations.

In addition, children have their own club houses and organizations. Children's special publishing houses issue books for children ; special children's film companies produce films for children ; special children's theatres produce plays for children. Soviet children have a whole world of their own which merges organically into the world of maturity.

This far-reaching system of child care has been one of the great single factors in releasing women from household drudgery and from constant fear for the safety and well-being of their children. It has made it possible for women to participate fully in all the manifold, exciting activities of the new socialist society. No doors are closed to Soviet women. This integral participation by the whole family in community life, coupled with freedom from economic anxiety, has enriched home life, and made the family a more solid and harmonious unit.

Pre-war Russia had the highest death rate in Europe. The Soviet Union, on the other hand, is one of the healthiest countries in the world. Compared with Tsarist times, the average life span has increased by ten years. The 1937 mortality figures of the U.S.S.R. were 40 per cent below those of the pre-revolutionary period. Another index of the improvement in health is the decline in the incidence of disease. In 1936, as compared with 1913, cases of small-pox had decreased by 96 per cent ; typhoid by 71 per cent ; diphtheria by 80 per cent. By 1937, small-pox, endemic in Tsarist Russia, had been eliminated. Soviet law guarantees every citizen the right to free medical care, free hospitalization, maintenance in disability and old age. State social insurance covers all citizens regardless of where they work, the nature of their employment, or income. Funds for this insurance are contributed entirely by industries and kolхозes. No insurance funds can be collected from the citizens or deducted from their wages. In 1937, 10,300,000,000 rubles were spent on health protection.

The social insurance provides ample pensions for old age.

In addition to free medical care, the Constitution of the U.S.S.R. guarantees the citizen the right to rest and leisure. This right is ensured as follows : the overwhelming majority of the people in the Soviet Union work only seven hours a day. All manual and other workers, whatever their occupation, receive vacations of two weeks or more with full pay ; thousands of sanatoria, rest homes and clubs throughout the country are at the disposal of the citizens. Some of these sanatoria and rest homes are former palaces of Tsars and the nobility ; these are now at the disposal of the people. In 1937, more than 800,000 people received medical care.

at the sanatoria. This widespread public health program reaches every section in the country, and modern medical services are available in the most remote districts.

10. Seventy-three per cent of the adult population of the country were illiterate under Tsarism, while in some of the most remote sections illiteracy was sometimes as high as 98 per cent. There were relatively few schools. Institutions of higher learning were virtually closed to the people. Distribution of newspapers, magazines and books were limited. Starting with this enormous handicap, the U.S.S.R. has eliminated illiteracy, introduced compulsory universal elementary education, organized scientific and research institutions, and developed large numbers of research workers, engineers and technicians.

GREAT ECONOMIC POWER

BY

E. VARGA

1. Largest area. 2. Rapid growth of population.
3. Fertile soil. 4. Grain. 5. Vernalization. 6. Up-to-date industry. 7. Labour productivity. 8. Rivers.
9. No debts.

A vast territory, inexhaustible natural resources and a numerous and fastly increasing population form the natural basis for the rapid progress of the Soviet Union.

The Tsarist Government proved unable to develop the productive forces of the country. In spite of immense natural wealth, Russia was an agricultural country with a backward industry. The people were poor and uneducated. Nearly three-quarters of the population were unable to read or write.

It was only when civil war and foreign intervention had ended that the Soviet Union was in a position to begin utilizing the natural resources of the country. Eighteen years of peace have been enough for the attainment of immense economic progress.

1. *The Soviet Union is the largest country in the world. It has an area of 8,220,000 square miles. The United States (including Alaska and other possessions) has an area of 3,145,000 square miles ; China 4,092,000 square miles ; and Brazil 3,282,000 square miles.*

Except for some islands in the Arctic, this huge territory comprises one unbroken mass of land. It stretches in a broad belt along the northern half of Europe and Asia, from Finland in the West to the Japan Sea and the Pacific Ocean in the East. In the North-East, by way of the Bering Straits, the Soviet Union borders on Alaska. From North to South, the U.S.S.R. stretches from the North Pole deep into the heart of Asia.

2. The Soviet Union has a population of 170,467,186, only less than China and India. The growth of population is unusually rapid. Since 1920, the population of the U.S.S.R. has increased by 35,900,000, and since the census of 1926 it has increased by 23,439,271.

Despite this rapid growth of population, there is no danger of so-called "over-population" in the U.S.S.R. There are no "surplus" or "redundant" workers, peasants or intellectuals. *On the contrary, unemployment is entirely unknown in the country and there is a tremendous demand for people of every kind of profession in all branches of economic and cultural activity.*

The natural resources of the Soviet Union are immense. It has extremely rich deposits of minerals of all kinds, the geological investigation of which is being conducted with great energy. The known geological reserves of oil today amount to 8,700,000,000 tons (in Tsarist times they were estimated at 800,000,000 to 900,000,000 tons).

The oil reserves of the U.S.S.R. exceed those of all other countries of the world combined.

The known coal reserves have increased in the last twenty years from 230,000,000,000 tons to 1,654,000,000,000

tons. The coal reserves of the U.S.S.R. are second only to those of the U.S.A.

The U.S.S.R. has the largest water power resources in the world, and the largest deposits of minerals suitable for fertilizers, and of manganese and ferrous ores.

The deposits of high-grade ferrous ores (with an iron content of about 62 per cent) are estimated at 10,600,000,000 tons. This does not include the huge deposits (estimated at 250,000,000,000 tons) of the poorer ferrous ores of the famous Kursk Magnetic Anomaly.

The Soviet Union is rich in non-ferrous metals such as copper, zinc and lead, and rare metals; it has also vast deposits of gold.

The U.S.S.R. has the largest timber resources in the world. Thirty-eight per cent of its surface is covered by forest. From the Finnish border along the northern part of the U.S.S.R., in Europe and Siberia, there stretches a vast forest zone about 600 miles wide. Here there are still millions of square miles of virgin timber which have never been touched by the hand of man. The forests of Siberian conifer constitute the last important source of supply for the world's paper industry.

3. In respect to fertility and suitability for agricultural purposes, the soil of the Soviet Union is unsurpassed. Of a total arable area of about 1,037,400,000 acres, only about 333,450,000 acres have as yet been brought under cultivation, including 247,000,000 acres under cereal crops. The following table, based on statistics compiled by the International Agrarian Institute in Rome for 1935-36, shows the relative grain areas and output of the Soviet Union and other countries.

Grain Area (acres)

	<i>Wheat</i>	<i>Rye</i>	<i>Barley</i>	<i>Oats</i>
U.S.S.R. ..	96,330,000	59,259,000	22,230,000	44,460,000*
Other countries ..	249,470,000	46,030,000	71,630,000	101,270,000*
of which :				
U.S.A. ..	59,280,000	2,470,000	7,410,000	34,580,000*

Grain Output (millions of tons)

	<i>Wheat</i>	<i>Rye</i>	<i>Barley</i>	<i>Oats</i>
U.S.S.R. ..	31	21	9	18
Other countries ..	97	25	34	49
of which : U.S.A.	17	1	6	17

It is clear from these figures that the Soviet Union holds the leading place in the world's production of grain. It accounts for about one-quarter of the world's output of wheat, nearly one-half of the output of rye and over one-quarter of the output of oats. In recent years agriculture in the Soviet Union has made considerable progress, and the above figures have been greatly exceeded.

Before the war there were about 20,000,000 peasant farms on the present territory of the Soviet Union. They cultivated the soil with the most primitive implements. A census taken in 1910 showed that the peasants had ten million wooden ploughs and 17,700,000 wooden harrows. Thanks to collectivization, the situation has radically changed in the past ten years. The peasant's house, household garden and orchard, cow, pigs and poultry used for the requirements of his family, constitute his "family farm" and continue to remain his personal property. The land, however, forms part of the large-scale farm run on collective lines with the most modern agricultural machinery. Data for January 1939 show

that the equipment at the disposal of the collective farms includes 475,000 tractors, 150,000 harvester combines, over 170,000 motor trucks, hundreds of thousands of tractor-drawn ploghs, machine threshes and other machines. Up-to-date agricultural equipment is employed more effectively and efficiently in the U.S.S.R. than anywhere else in the world.

Besides the employment of modern machines, other methods are being adopted for the improvement of harvests: In regions subject to drought, wooded zones are created as a protection from the dry winds. Irrigation is bringing millions of acres of new land under cultivation. The use of sorted seed has assumed large dimensions.

5. The method of *vernalization*, a highly valuable discovery of Soviet scientists, is raising the crop yield considerably. The experience of Canada in the selection of early-maturing varieties is being borrowed to spread agriculture farther and farther to the North. The northward advance of fruit-growing has also been made possible by the methods devised by the famous horticulturist I. V. Michurin.

As a result of these measures, agricultural output in the U.S.S.R. is now double that of 1913.

Industry in the Soviet Union has made immense progress during the past ten years. Russia in Tsarist days was a poor, agrarian country. The peasants starved, but the country exported agricultural produce in abundance, purchasing from abroad machinery, manufactured goods and luxury articles. The majority of the industrial plants in Russia belonged to foreign capitalists—British, French, Belgian and German. Of this pre-war industry, practically nothing is left today. An absolutely new industry has sprung up in its place. New

branches of manufacture which were unknown in Russia in Tsarist times have been created, among them being machinery, tractors, automobiles, aircraft, harvester combines and chemicals. In this the Soviet Union was aided by American engineers and skilled workers.

By 1937, over 80 per cent of the industrial output of the country was already being derived from new plants which had been built or entirely reconstructed in the period of the First and Second Five-Year Plans. Today the proportion of output from new plants to total output is even greater.

6. *In no other country in the world is industry equipped with such new and up-to-date machinery as in the Soviet Union.*

The rapid increase in the number of industrial plants has been accompanied, especially in the last ten years, by a rapid increase of output.

Whereas, after the severe economic crisis which began in 1929, industrial output in capitalist countries attained in 1937 barely 103.5 per cent of the output of 1929, and in the second half of 1937 again declined under the influence of a new crisis, the total output of industry in the U.S.S.R. in 1937 amounted to 424 per cent of the output of 1929, which signified a seven-fold increase compared with pre-war output.

In 1938 the total industrial output of the U.S.S.R. attained 477 per cent of the level of 1929. In the capitalist countries, on the other hand, industrial output in 1938 was 13.5 per cent less than in the previous year and had dropped to 91 per cent of the level of 1929.

The immense growth of industrial output in the past ten years has advanced the Soviet Union to the ranks of the

foremost industrial countries. Its output is now the largest in Europe and the second largest in the world, yielding place only to that of the United States. However, as regards industrial output per head of population, the Soviet Union still lags behind a number of the leading capitalist countries. In its Third Five-Year Plan (1938-42), the U.S.S.R. was tackling the task of making good this lag.

7. The Soviet Union has immense achievements to record in the sphere of productivity of labour. During the period of the Second Five-Year Plan alone (1933-37), productivity of labour in large-scale industry increased by 82 per cent (as against a planned increase of 63 per cent for this period) ; the increase in the building industry was 83 per cent.

In the days when economic disruption was at its height, Lenin set before the Soviet country the aim of overtaking and outstripping the technically and economically advanced capitalist countries. Today we see this bold aim being realized.

The building of new industries was accompanied by the reconstruction of the railroad system. The total freight carried in 1938 was 229,210,000,000 ton-miles, as compared with 105,259,000,000 ton-miles in 1933. The total length of railroad line reached 54,000 miles in 1938, as against 36,000 miles in 1913. The Soviet Union is second only to the U.S.A. in length of railroad line. However, in view of the gigantic requirements of the country, the present length of line is obviously inadequate. The construction of new lines is proceeding steadily ; in the period of the Third Five-Year Plan it is proposed to put into operation 6,800 miles of new railroad.

8. The Soviet Union has the largest length of navigable river in the world. The number of navigated and timber-

floating routes in operation is increasing from year to year, their total length amounting to 83,000 miles in 1938, as compared with 47,000 miles in 1913. Canal construction is making it possible to create a connected system of waterways covering the whole country. The canals now under construction will interconnect the Black Sea, the Sea of Azov, the Caspian Sea, the Baltic Sea and the Arctic Ocean.

The vast territory of the Soviet Union necessitated the utmost development of aviation.

The rapid industrial growth of the Soviet Union has emancipated it from foreign dependence to which Tsarist Russia was subject. This was essential not only from the economic standpoint, but also to render the country capable of defending itself from the frankly aggressive intentions of certain neighbouring States. The Red Army is being supplied by Soviet industry with all its requirements. Had it not created its own heavy industry—the manufacture of machinery, chemicals, etc.—the Soviet Union would have been defenceless in face of the threatened attacks of its enemy.

However, the U.S.S.R. has made itself independent of foreign countries but without any idea of economic self-sufficiency or of deliberately curtailing its foreign trade. On the contrary, next few years would have witnessed a growth in its foreign trade had it not been for the outbreak of the war.

It is worth noting in this connection that the Soviet Union has no foreign debt. It always meets its current obligations with the utmost punctuality, in sharp contrast to most capitalist countries, which during the crisis of 1929-33 suspended payment on their foreign loans. The large and rapidly growing gold industry of the Soviet

Union enables it to increase its imports without having recourse to foreign borrowings.

The factors which have promoted the U.S.S.R. to a foremost place among the economic powers of the world, second only to the U.S.A., are its vast natural resources, the rapid increase of its population and cultural development, and its social system, which precludes the possibility of economic crises and under which any increase in production benefits all citizens. There is no obstacle to the further progress of the Soviet Union except the menace of foreign attack.

Place of the U.S.S.R. in World Production

	In the world		In Europe	
	1913	1937	1913	1937
Gross industrial output ..	5th	2nd	4th	1st
Machine building	4th	2nd	3rd	1st
Agricultural machine building ..	5th	1st	3rd	1st
Tractors* ..	—	2nd	—	1st
Harvester combines* ..	—	1st	—	1st
Automobiles and trucks* ..	—	6th	—	4th
Of which: trucks*	—	2nd	—	1st
Electricity ..	15th	3rd	7th	2nd
Coal ..	6th	4th	5th	3rd
Iron Ore ..	5th	2nd	4th	1st
Steel ..	5th	3rd	4th	2nd
Raw copper ..	7th	5th	3rd	1st
Aluminium* ..	—	3rd	—	2nd
Gold ..	4th	2nd	1st	1st
Superphosphates ..	16th	3rd	13th	1st
Beet sugar ..	2nd	1st	2nd	1st

* Note : The industries manufacturing tractors, harvester combines, automobiles and trucks, and aluminium did not exist before 1921.

NATIONAL INCOME

BY

I. SAUTIN

1. In Tsarist time. 2. Nine-fold improvement. 3. Socialist enterprises. 4. Short working hours. 5. Increase in output. 6. A comparison. 7. Welfare of workers.

The national income of a country is one of the most graphic and comprehensive indices of its economic development. Its size and movement are an epitome of the development of the various branches of the country's economic activity. The distribution of the national income is a reflection of the social structure of the country.

1. In old Russia, the Russia of the Tsars, capitalists and landlords, the national income could be called national only because it was created by the exploited working folk of the nation. The greater part of the national income went into the pockets of a small fraction of the population.

2. In Tsarist times, nine-tenths of the population of Russia owned little or no property. After paying taxes and other imposts to the State and landlords, this part of the population received no more than 20 or 30 per cent of the national income. The rest passed into the pockets of the propertied classes—the landlords, capitalists and kulaks (rich peasants), who constituted an insignificant proportion of the population.

The unrestricted exploitation of the workers and peasants, whose labour created the vast incomes of the capitalists, landlords and Tsarist officials, depressed the income of the working population to a level which could scarcely provide minimum human requirements.

Judged by the national income, total and per capita, tsarist Russia was one of the poorest and most backward countries in the world. The national income per head of population was three times as large in Germany, three and a half times in France, and four and a half times in Great Britain.

But as a result of the Socialist Revolution, Russia, so backward economically and technically in Tsarist times, has now become a foremost industrial power. During the period of the first two Five-Year Plans (1928-37), industry became the most advanced branch of the national economy of the U.S.S.R. and was equipped with the most up-to-date machinery.

The output of Socialist industry in 1938 was over nine times the industrial output of pre-war Russia. In respect to gross industrial output, the Soviet Union has in recent years advanced to first place in Europe and second place in the world.

The industrial structure of the Soviet Union has been thoroughly renewed : over 80 per cent of the industrial output in 1937 was obtained from plants either newly built or completely reconstructed in the period of the First and Second Five-Year Plans.

Socialist industry has enabled the peasants, with the assistance of the Soviet Government, to completely reconstruct the agriculture of the country. The twenty million small individual farms have now been replaced by large socialist

farms, the *kolkhozes*, or collective farms, equipped with the most up-to-date machinery. The primitive wooden ploughs and harrows which constituted the principal instruments of agriculture in Tsarist times have now disappeared.

3. In 1937, 99.1 per cent of the national income of the U.S.S.R. was already being derived from Socialist enterprises. They accounted for 99.8 per cent of the total industrial output, 98.6 per cent of the total agricultural output (including the personal auxiliary husbandry of the collective farmers), and 100 per cent of the country's trade.

The abolition of the exploiting classes in the U.S.S.R., by putting an end to the parasitic consumption of a large part of the national income (roughly one-half in Tsarist times), has set free large resources for the expansion of industry and for the improvement of the material and cultural conditions of the working population. In addition, the Socialist economic system, being based on planning, makes it possible to organize production on rational lines and to eliminate the huge waste incident to capitalist competition. But planning became possible only after private ownership of the means and implements of production had been abolished, and only after the economic life of the country had been rid of the anarchy of capitalist production called forth by the conflicting interests of capitalist groups.

The Socialist economic system has created every requisite for planning and for the steady and rapid economic progress of the country *based upon the extensive application of science and technology*. The supply of modern machinery to industry and agriculture has resulted in a tremendous rise in the productivity of labour. During the period of the Second Five-Year Plan, productivity of labour in large-scale industry increased

by 82 per cent. In 1937, productivity of labour (determined by daily output calculated in fixed prices) was over three times as much as in 1913.

Making allowance for the fact that the working day in the U.S.S.R. is six or seven hours instead of ten or eleven hours as it was in Tsarist times, we find that productivity of labour is over four times as high as in pre-war days.

The high level of technical progress, the rising productivity of labour, and the accompanying improvement in the standard of living of the working class and the collective farm peasantry have called forth a widespread movement among the people for high standards of labour productivity. This is the Stakhanov movement, named after its initiator, Alexei Stakhanov, a coal miner. It started in 1935 and has now spread widely among the workers and collective farmers.

Compared with the previous year, the national income of the U.S.S.R. in 1937 increased by 10,300,000,000 rubles. Of this sum, 8,800,000,000 rubles, or 85 per cent, was due to higher productivity of labour, the remaining 1,500,000,000 rubles being due to increased labour power resulting from the drawing of new workers into industry.

4. The working people of the Soviet Union are directly interested in increasing the output. Firstly, labour in the Soviet Union is remunerated in accordance with quantity and quality, so that the more a man produces the more he receives. Secondly, the working people are interested in increasing their output as enlightened members of Socialist society, for the economic progress of that society is the basis of their own welfare and culture.

Manual workers, peasants and intellectual workers who set examples of high productivity in Socialist labour and who

achieve success in science and technology are held in high respect and esteem by the country ; they receive material rewards, and honours and distinctions from Government.

The growth of the national income of the U.S.S.R., as compared with 1913, may be seen from the table below.

National Income of the U.S.S.R.

Year			In billions of rubles (in 1926-27 prices)	Per cent of 1913	Per cent of 1917
1913	..	..	21.0	100.0	—
1917	..	..	16.0	76.2	100.0
1928	..	..	25.0	119.1	156.3
1932	..	..	45.0	214.3	281.2
1937	..	..	96.3	458.6	601.9
1938	..	..	105.0	500.0	656.3

5. In 1938 the national income of the U.S.S.R. was five times as large as it was in 1913 and six and a half times as large as in 1917, the last year of the capitalist system in Russia. In the period 1900-13, the national income of Russia increased by only 39 per cent, an annual increase of about 3 per cent. No small part of this increase was due to foreign loans and to foreign investments generally.

In the foremost capitalist countries the rate of increase of the national income has fluctuated from 3 per cent to 8 per cent per annum at different periods. In the U.S.S.R. we observe a steady increase in the national income during the past ten years, exceeding 16 per cent annually.

And it should be remembered that the Soviet Union achieved its unusually high rate of economic progress entirely

on its own internal resources, without the aid of foreign loans or foreign investments of any kind.

Over 99 per cent of the national income of the U.S.S.R. in 1937 was obtained from Socialist enterprise (State, co-operative and collective farms), and only one per cent from the private enterprise of individual peasants and handicraftsmen. In the U.S.S.R., as its Constitution lays down, the land, its natural deposits, waters, forests, mills, factories, mines, rail, water and air transport, banks, post, telegraph and telephones, large State-organized agricultural enterprises, as well as municipal enterprises and the bulk of the dwelling houses in cities and industrial localities, are State property ; that is to say, they belong to the whole people. All these enterprises are administered by State bodies in accordance with a scientifically worked-out plan. The product and profits of these enterprises do not pass into the pockets of private persons, but into the coffers of the State, which uses them for economic development and for the improvement of the living conditions of the population. For this reason periods of crisis, when well organized mills and factories are forced to work part time, or come to a standstill altogether, are unknown and impossible in the U.S.S.R.

The Socialist ownership of the means and implements of production, the absence of competition, the impossibility of crises due to overproduction, and the system of economic planning have created an ever-expanding field for labour and call for the steady enlistment of all the labour forces of the country.

All this was of course impossible in Russia in the days of the landlords and capitalists. In those days the vast natural resources of the country largely remained unutilized. Even during industrial booms the number of unemployed

workers in the towns was never less than a million. Agrarian over-population reached enormous proportions. Tens of millions of peasants, nearly two-thirds of the rural population, did not possess enough land and implements to sustain a minimum standard of life. Before the Revolution, 65 per cent of the peasant households consisted of poor peasants, 20 per cent of middle class peasants and 15 per cent of rich peasants (kulaks). Thirty per cent of the peasant households were without horses, 34 per cent without implements, and 15 per cent without land to cultivate. The best, most fertile land belonged to the landlords and kulaks. Of a total arable area of 907,000,000 acres, the royal family, the landlords and the monasteries owned 377,000,000 acres and the kulaks over 197,000,000 acres. The Great Socialist Revolution, by abolishing private ownership of the land and means of production, emancipated the working people of the town and country from exploitation and eliminated poverty from the country.

In the Soviet Union the national income is entirely at the disposal of the working people and their State. It is used for the expansion of industry, for strengthening the defensive power of the country and for raising the general standard of living and culture.

6. The Constitution of the U.S.S.R. guarantees the right to work, rest and leisure, education, and maintenance during sickness, incapacitation and old age. The cost of education, students' stipends, public health (hospitals, rest homes and sanatoria), sick benefits, maternity benefits, grants to large families, and old age pensions are borne by the State, the factories or the trade unions. There is no indirect taxation in the Soviet Union. Old age and other pensioners, as well as workers in the lower paid categories, pay reduced rents.

The national income of the U.S.S.R. is distributed in accordance with the Socialist principle : " From each according to his ability, to each according to his work." The labour of every citizen is remunerated directly in accordance with its quantity and quality.

All persons employed in the State-owned industries and offices are paid according to their output. The scales of payment for output are fixed by the State in conjunction with the trade unions in accordance with the skill and qualification of the worker. Wages are fully guaranteed irrespective of whether the given undertaking is working at a profit or loss.

In a collective farm, the revenue is divided among the members in proportion to the number of work-day-units and credited to them in the course of the year. The collective farmer is credited with a work-day-unit for the performance of a definite quantity of work requiring average skill. If in any day he performs more than the fixed quantity of work, or performs work requiring higher skill, he is credited with more than one work-day-unit. Thus in one day of work a collective farmer may receive credit for several work-day-units. The bigger the revenue of the collective farm, the larger the amount of money and produce that falls to the share of each work-day-unit credited. In addition, the collective farmers have their own personal auxiliary husbandries (household garden and orchard, cows, pigs, goats, etc.), the produce from which, like the produce they receive as their share of the revenue of their collective farm for the number of standard work-day-units credited to them, is their own to consume or to sell as they please. The whole revenue of the collective farm in money and produce is divided among its members in the manner described, with the exception of a small tax payable

to the State, a certain percentage of the revenue which goes into the indivisible fund of the collective farm and is used for the building of clubs, storehouses, cattle barns and other farm buildings and for the purchase of machinery and implements, and another percentage which is used for the common requirements of the collective farm and for the maintenance of superannuated collective farmers, for sick benefits and maternity benefits.

Thus the growth of the national income of the U.S.S.R. is equivalent to a growth of the incomes of the working population. In 1937, as compared with 1932, the average wage of workers and other employees in all branches increased by 113.5 per cent, the total payroll of the country by 151 per cent, and the payroll of large-scale industry by 179 per cent.

The steady growth of incomes is accompanied by a steady increase in the consumption of goods and produce. As compared with 1932, the consumption of butter in 1937 had increased by nearly 150 per cent, pork by 250 per cent, sausage by nearly 300 per cent, white bread by nearly 200 per cent, and fruit by nearly 300 per cent. And in this respect, the countryside does not lag behind the towns. In 1937 each collective farm household received on an average 1.75 tons of grain, as compared with 0.3 ton in 1932.

The total monetary income of the collective farms amounted to 4,568,000,000 rubles in 1932, and to 14,241,000,000 rubles in 1937. Compared with 1933, the per capita consumption of sugar by the rural population in 1937 had increased nearly six and a half times, confectionery more than three times, and fats more than twice. The consumption of nourishing foods is continuing to grow. In the first half of 1938, as compared with the corresponding period in the

previous year, the per capita consumption of butter by collective farmers increased by 32 per cent, and sugar by 17 per cent.

The rise in the standard of living is accompanied by a similar rise in the standard of education and culture. For example, only 6,117,000 children, or one-fifth of the rural child population of school-going age, attended schools in Tsarist Russia in 1914. Today in the U.S.S.R. education is universal ; in 1937, 20,800,000 children attended rural schools. In the period of the Second Five-Year Plan alone, the number of children attending elementary and high schools in the U.S.S.R. rose from 21,300,000 to 29,400,000.

The Third Five-Year Plan (1938-42) was a plan for the gradual transition from Socialism to Communism. It provided for an increase in the national income by 80 per cent, as compared with 1937. We already found that the national income was steadily rising in the period of the Third Five-Year Plan, and the standard of living of the working population rose correspondingly.

In the U.S.S.R., unlike the capitalist countries, the national income is really the income of the nation, for it is entirely at the disposal of the people. Both the national wealth and the national income of the U.S.S.R. are an index of the general standard of living and growing prosperity of the population.

MINERAL WEALTH

BY

I. M. GUBKIN

1. Great scientists. 2. Geological Board. 3. New discoveries. 4. Power-producing minerals. 5. Ores.

The Union of Soviet Socialist Republics occupies an area of 8,222,00 square miles, covering a huge part of the Eurasian continent. From the geological standpoint its territory represents a rich complex of formations of highly varied structures and ages.

1. In pre-revolutionary times, useful minerals were studied in Russia by great scientists like Lomonosov and Karpinsky. The former is justly regarded as the founder of the science of geology in Russia ; the latter as the father of Soviet geology. The science reached its full amplitude of development since the establishment of the Soviet Government in the period of the three Five-Year Plans.

In Tsarist days, the mining industry was concentrated at three or four points, chiefly in the European part of the country. There were only a few small mining centres in the Asiatic part—in the Altai Mountains (non-ferrous metals) and at Kuznetsk (coal). The mines, as a rule, belonged to foreign capitalists.

The Geological Service confined its activities chiefly to geological charting ; it did practically nothing in the way of exploring and prospecting for useful minerals. The number

of geologists was ridiculously small, there being no special schools to train them.

The fact that the mineral resources of the country were almost entirely unknown created difficulties for the Soviet Government in its very earliest years. The rapid expansion of industry created an enormous demand for ores and fluxes. Mineral fertilizers were needed for agriculture. The chemical and other industries were also clamouring for raw materials.

As we know, the First Five-Year Plan, despite the vastness of development work it envisaged, was fulfilled in four years ; some of the most important branches of the mining industry—oil, for example—fulfilling their plans even in $2\frac{1}{2}$ years. This was accomplished in the face of tremendous difficulties and obstacles, which, in the case of minerals, were still further complicated by the fact that they not only had to be discovered, but to be discovered and surveyed precisely in the places where they were needed.

In the past, the concentration of industry in the European part of Russia was due to the colonial policy of the Tsarist Government. The more remote regions of the country, occupied mainly by non-Russian peoples, were looked upon by Government purely as reserves for the supply of Central Russia with agricultural produce. As a consequence, the vast mineral deposits of Siberia, Kazakhstan, Central Asia and the Caucasus (with the exception of oil in the case of the latter) not only remained unutilized, but were not even discovered and studied.

About 90 per cent of the coal output of Russia in Tsarist times came from the Donetz Basin ; over 60 per cent of the iron ore from Krivoi Rog ; and 95 per cent of the oil output from the Baku fields. This meant that oil had to be transported to Siberia and the Far East from Baku, a distance of

thousands of miles ; and the position was very much similar in the case of coal and the products of the metallurgical industry.

The tremendous developments planned by the Soviet Government demanded the rapid and systematic study of the productive forces of the country, including its mineral resources. This, in turn, demanded the development of geological exploration and survey on a very wide scale.

The first task undertaken was the training of skilled forces for this work, for which purpose a number of specialized medium and higher educational establishments were opened. By the time the First Five-Year Plan was inaugurated, thousands of geologists were already engaged in studying the mineral resources of the U.S.S.R. Today the number of Soviet geologists can be counted in tens of thousands.

2. The second step taken by the Soviet Government in the realm of geological survey and research was to entrust all branches of the work to one body, the Geological Board. The effect of this was to place geological survey and research on strictly planned and systematic lines, and to ensure the rational employment of men and materials and the rapid and fullest use of the results obtained.

Nowadays, the most up-to-date equipment is used in geological work in the U.S.S.R. Originally it had to be obtained from abroad, but it is now being produced at home.

The abolition of private property in land has opened up unlimited possibilities for geological science in the U.S.S.R. In prerevolutionary days, the work of the geologist was hampered by the existence of private boundaries, an impediment which has now been entirely removed.

3. Since the establishment of the Soviet Government, many minerals have been discovered with which were formerly

unknown in our country—among them apatites, potassium salts and borates.

The apatite deposits of the U.S.S.R. are the largest in the world ; those of the Kola Peninsula are estimated at 2,000,000,000 tons.

The potassium salt deposits of Solikamsk are computed at 18,000,000,000 tons (in potassium oxide equivalent). The U.S.S.R. possesses 27,700,000,000 tons of these salts, or 85 per cent of the world's known deposits.

An expedition of the Academy of Sciences has discovered new rich deposits of potassium salts in Western Kazakhstan. Their composition is such as to permit the extraction from them of potassium sulphate—an excellent fertilizer for cotton, tobacco and other crops.

In close proximity, near Lake Inderrich, deposits of borates, the raw material of boron, have been discovered.

The voluntary study, individual and collective, of the natural resources and productive potentialities of the various regions of the country is very widespread in the U.S.S.R. There are large numbers of local natural history societies and clubs, as well as museums, national reserves and so on. Numerous deposits of useful minerals have been discovered by such voluntary organizations.

Important contributions to the knowledge of the natural resources of the country have been made by individual amateurs. The mine laboratory in the village of Bystrovka (Kirghiz Republic), for example, has thousands of specimens of valuable metallic ores found and donated by collective farmers and trappers. Information furnished by a local peasant by name Mangulov has resulted in the discovery of five outcrops of lead and asbestos.

We shall briefly relate what has been accomplished by the Soviet Union in the location of mineral deposits of economic value.

4. *Oil.* In Tsarist times the oil reserves of Russia were estimated at eight or nine hundred million tons. A computation made at the time of the International Geological Congress in 1937 placed the figure at 6,500,000,000 tons, the proven oil reserves being computed at 4,000,000,000 tons.

In the course of 1937 and 1938, geological survey work in the Volga region and on the western slopes of the Urals began to yield results.

There has been a considerable increase in the estimated oil reserves of the Azerbaijan Soviet Socialist Republic and other of the older oil-bearing regions, as well as in the recently discovered oil-bearing regions in the Bashkir, Dagestan and other Soviet Republics.

In 1938 the geological oil reserves of the U.S.S.R. were estimated at 8,700,000,000 tons, the proven oil reserves exceeding 4,600,000,000 tons.

There has been a marked change in the geographical disposition of the oil industry, which shows a distinct eastward movement. That considerable oil deposits will be discovered in the near future in Siberia is now beyond doubt.

The known oil reserves of the U.S.S.R. at the present time considerably exceed the aggregate reserves of other countries.

Coal. The geological reserves of coal in Russia were estimated in 1913 at 230,000,000,000 tons. Computations made at the time of the International Geological Congress in 1937 fixed the coal reserves of the U.S.S.R. at 1,654,000,000,000 tons.

Thus, the known coal reserves of the U.S.S.R. have increased sevenfold in twenty years. They are sufficient to cover the country's requirements for several centuries.

The discovery and investigation of new fields has resulted in a considerable change in the geographical disposition of the coal industry. In Tsarist times, Russia's coal requirements were almost entirely supplied from the Donetz Basin. Today, in addition to this source, the U.S.S.R. derives a substantial part of its coal from the Urals, Kazakhstan, Siberia, the Soviet Far East, Central Asia, the Moscow Region and other fields.

Soviet coals are of exceptionally high quality, only 20 per cent being brown coal, the rest hard coal.

The coal reserves of the U.S.S.R. are exceeded only by those of the U.S.A.

Recent geological investigations furnish ground to expect the early discovery of new, rich coalfields, chiefly in the eastern part of the U.S.S.R., the Central Asiatic Republics and Kazakhstan.

5. *Iron.* The geological reserves of iron ore in the U.S.S.R. are estimated today at 10,600,000,000 tons, as against 2,000,000,000 tons in 1913.

In addition, there are vast deposits of ferriferous quartzite (estimated at 250,000,000,000 tons) with an iron content averaging 35 per cent.

The process of extraction of iron from ferriferous quartzite on industrial lines has been fully worked out, but owing to the abundant deposits of iron ore, ferriferous quartzite is regarded as a reserve source of supply.

Chromite. Chromite deposits were entirely unknown in Russia in Tsarist times. Deposits of chromite ore in the U.S.S.R. today are estimated at over 16,000,000 tons.

Manganese. Manganese deposits were estimated in 1913 at 167,000,000 tons ; today, geological investigations have raised the estimate to 750,000,000 tons. The high quality of Soviet manganese is generally recognized.

Copper. Copper deposits were estimated in 1913 at 62,700 tons (pure metal) ; the estimate today exceeds 19,500,000 tons.

Aluminum. No deposits of aluminum ore were known in Russia in Tsarist times. The U.S.S.R. today has a large aluminum industry, whose ore requirements are entirely home supplied. The earth used is bauxite, the estimated reserves of which exceeds 30,000,000 tons.

In addition to bauxite, the U.S.S.R. possesses large deposits of other clays with a large alumina content (nepheline, cyanite, alunite). The process of extraction of aluminium from these earths has been worked out and will be applied on industrial lines.

Chemicals. In this field attention has been mainly devoted to mineral fertilizers, which in Tsarist times Russia used to import.

Apatite. As already mentioned, the apatite reserves of the U.S.S.R. are estimated at 2,000,000,000 tons.

Potassium salts. Deposits of potassium salts were unknown in the U.S.S.R. until 1929. The deposits discovered in that year in Solikamsk contain 18,000,000,000 tons of oxide.

The U.S.S.R. has larger deposits of minerals suitable for fertilizer purposes than any other country in the world.

In recent years rich deposits of boron—the only mineral hitherto not found in commerical quantities—have been discovered in the U.S.S.R.

Thanks to the broad scope on which geological research has been conducted, it is now known that the territory of the U.S.S.R. contains all the useful minerals in commercial quantities.

Geology is held in high esteem by the Soviet Government as a science which can contribute largely to the welfare and prosperity of the population.

In the U.S.S.R. the land and its resources belong to the people and are completely at the disposal of the people. And all that is done in the field of geology, the efforts both of the profesional and amateur geologists, have one purpose in view—to benefit the working people of the country and to further its industrial progress.

PEOPLES' ROLL IN ECONOMIC PLANNING

BY

J. JOFFE

1. Intricate mechanism. 2. Organization. 3. How plans are drawn up. 4. 90,000 rail road cars a year. 5. Key problems. 6. Endorsement of the plan. 7. Honours. 8. Joint work. 9. Capitalist countries and Russia.

The Soviet is the only country in the world where crises and unemployment and anarchy of production are unknown ; for it is the only country that is developing according to plan. The tremendous advantages accruing from planned economy are felt by every worker, collective farmer and intellectual in the course of the thousand and one little things that make up their everyday life.

Just consider the facts. In the eighteen years since the conclusion of the Civil War, there has not been a single year in which output has declined or has been stagnant. It is already nine years since unemployment was abolished once and for all. The right to work is guaranteed by the Soviet Constitution. And there is not another country in the world that has experienced such rapid cultural progress as the Soviet Union, progress which embraces all parts of its vast territory.

A backward and poverty stricken country in the past, it has now become a mighty industrial power possessing a first-class army with the most up-to-date equipment.

1. The economy of any country is an exceedingly intricate mechanism. That of the Soviet Union includes thousands of factories and mills, 243,000 collective farms,

a vast transport system—railways, waterways, motor transport and airways—hundreds of thousands of stores and shops and an extensive network of schools and other educational establishments.

Every Soviet factory, collective farm, university, etc. functions according to a definite plan. This plan is given the effect of law and is binding on each and every plant, and institution. All the resources of the country are mobilized to fulfil the plan adopted.

The plan of every industrial establishment contains definite figures stipulating the quantity and quality of its output for the coming year. The plan determines production costs, the sale prices and marketing conditions of the products, the number of workers, the office and technical staff it is to employ, wages, the standards of labour productivity, the expenditure quotas for raw material, fuel, and other supplies and the standards of depreciation of machinery.

Every collective farm receives a plan which stipulates the acreage of various crops, the agronomical measures it must apply, the harvest yield for the various crops etc.

Every store has a plan fixing its volume of trade and the amount of overhead expenses.

In the Soviet Union, as in a highly developed country, the various branches of economy are closely interwoven and interdependent. This interdependence finds its reflection in the plans of the various branches of the national economy, which provides for such correlation in the development of the various branches of economic life as to secure the most rational and rapid progress of the country as a whole.

The plan for the development of the national economy of the U.S.S.R. is a national programme which defines the work to be accomplished by tens of millions of people. This

circumstance means that highly important and intricate demands are made of the plan and presupposes the existence of such conditions as to ensure the possibility of carrying out planned economy.

2. In the Soviet Union the land, industry, the banks and the transport system are State property, that is they belong to the whole people.

All industrial establishments, State farms (large State-owned agricultural establishments), trading enterprises, schools, universities, medical institutions and other economic or cultural institutions and establishments are under the jurisdiction of the various People's Commissariats.

The work of the collective farms is governed by a special set of rules adopted separately by each collective farm on the basis of the Model Collective Farm Rules adopted by the Second All-Union Congress of Collective Farm Stock-workers and endorsed by Government. In conformity with these rules, the collective farms conduct their work according to plan and strictly adhere to the production plans fixed by Government. This enables the State to plan agricultural as well as industrial development.

Thus, in the Soviet state all the material wealth of the country belongs to the people. Through its bodies the State directly supervises the entire life of the country, concentrating full power in its hands (endorsement of plans, appropriation of financial and material resources, appointment of executive, etc.).

The drawing up of plans and supervision of their fulfilment is one of the most important aspects of the work of the People's Commissariats. Planning is not the prerogative of any one organization, but a component, organic part of

the activities of the whole State and economic apparatus of the country.

The highest organ of State authority of the U.S.S.R. is the Supreme Soviet of the U.S.S.R. The highest executive and administrative organ of State authority of the Union of Socialist Republics is the Council of People's Commissars of the U.S.S.R. which confirms the national economic plan and supervises its fulfilment.

Attached to the Council of People's Commissars of the U.S.S.R. is the State Planning Commission with a staff of prominent experts in all fields of economy and culture. Similar planning commissions function under the Councils of People's Commissars of the various Republics. Planning commissions have likewise been set up under the executive committee of Soviets of all territories, regions and districts of the U.S.S.R.

The plans for the various industries are drawn up by the People's Commissariats, which maintain departments for this purpose. Planning departments have been similarly set up in all factories, mills and institutions.

Thus, there are no organizations in the U.S.S.R. engaged in abstract planning. All State bodies have planning departments or commissions under them and this ensures unity of leadership.

3. The method by which plans are drawn up may best be illustrated by the example of the annual plans for industry. Besides annual plans, however, it is also the practice in the U.S.S.R. to draft quarterly plans, which, as part of the yearly plan, provide a concrete programme for the current three months.

Work on drawing up the annual plans usually begins six or seven months before the new year.

On the basis of data submitted by the People's Commissariats and the State Planning Commission, Government sums up the results of plan fulfilment for the current year. In these summaries, which are based on a profound and thorough analysis of the economic trends in the country, Government rates the progress made in the fulfilment of the yearly plan and the Five-Year plan as a whole. It establishes which branches of industry, are lagging behind in plan fulfilment and the reasons for this, which branches are successfully carrying out their plans and the means they employ to achieve this. This work furnishes a comprehensive picture of plan fulfilment throughout the country.

Besides summing up results, Government determines the chief tasks that must be carried out in the next few years. These tasks are formulated in the Instructions for Drawing up Plans.

The general features of all economic plans are defined as follows in Article 11 of the Constitution of the U.S.S.R. :

"The economic life of the U.S.S.R. is determined and directed by the State national economic plan with the aim of increasing the public wealth, of steadily improving the material conditions of the working people and raising their cultural level, of consolidating the independence of the U.S.S.R. and strengthening its defensive capacity."

All the elements of the plan are subordinated to the purposes of carrying out these aims.

The preliminary programme fixed by Government gives due consideration to the close connections between various industries. Thus, the programme of increasing the production of pig iron requires a corresponding increase in the output of coke and iron ore. The programme for increas-

ing school attendance presupposes a preliminary investigation as to how the additional school children will be provided with school buildings, teachers, textbooks, budgetary funds, etc. Hence, the focal point in the work of all planning bodies is to map out correct proportions for the development of the various branches of economy and culture.

The Soviet Government bases its plans on a detailed calculation of potentialities.

In working out the preliminary plan, the planning commissions and Government carefully ascertain the visible natural resources, the extent to which they have been prospected and the possibilities of their industrial exploitation, the existing production capacity and the extent to which newly built establishments are ready for operation, the amount of available labour, power, etc.

However, existing production capacities cannot serve as the sole criterion in mapping out production programmes if Government is convinced that a drastic increase in the output of one branch of industry or another is necessary.

A striking instance of this was the 1935 plan for the construction of railroad cars. The production in 1913 was 14,832. The 1935 plan was for 90,000 cars.

Other factories co-operated in carrying out this task. This did not present any particular difficulties, for the entire industry of the country is the property of the whole people and is in the hands of the State. As a result of all the measures taken, 90,758 cars were built in 1935.

This example illustrates the tremendous potentialities of the national economy when it is organised as one planned whole.

5. In the instructions for drawing up the plan Government indicates the key problems for the period covered by the plan; it specifies the industries that will play a decisive part in fulfilling the plan and formulates their basic tasks.

The determination of the key problems is a factor of great importance in drawing up plans, for the plan fulfilment of all other branches of industry is regarded from the standpoint of the extent to which they ensure the fulfilment of the plan for the key industry.

The selection of one or another key problem for the period covered by the plan depends on the general economic and political tasks facing the country.

Thus, for example, the chief economic task confronting the country in the Second Five-Year Plan period (1933-37) was the technical reconstruction of the Soviet national economy and the introduction of up-to-date machine technique in all branches of the national economy. In view of this, the development of the machine building industry was singled out as the key problem of the plan. The plans for the development of the iron and steel industry and of the non-ferrous metallurgy and the plans for capital construction were considered from the point of view of the extent to which they would ensure the development of the machine-building industry.

During the Second Five-Year Plan period the output of the machine-building industry increased from 9,400,000,000 roubles in 1932 to 27,500,000,000 roubles in 1937.

When the People's Commissariats receive the government instructions for drawing up their plans they proceed to determine the preliminary programmes of each of the

industries under their jurisdiction. The Chief Administration of the given industry defines the plan for each establishment under its control.

These preliminary plans are then discussed by both the management and the trade union, as well as other public organizations of the establishment. At their production conferences the workers and employees discuss whether all potentialities for increased output, higher labour productivity and reduction in production costs have been taken into account. These conferences thoroughly analyse the experience of production brigades and of Stakhanovite workers who have attained a high degree of efficiency, and make amendments to the proposed plan based on the specific nature and potential capacity of the given establishment.

All these plans, with additions and amendments, are then returned to the respective People's Commissariat, which, after due examination, draws up a single, uniform plan for the whole Commissariat and submits it to Government for approval. At the same time, on the basis of data furnished by the establishments and industries under its control, the People's Commissariat submits to Government an estimate of the amount of fuel, electric power, raw material, working capital and funds for capital investment required for the fulfilment of its production programme.

6. All plans submitted to Government for endorsement are first of all studied by the State Planning Commission, which submits its opinion on each of these plans.

In formulating the final plan for the various People's Commissariats, Government takes into account the findings of the experts consulted and of the State Planning Commission. The plan adopted by Government becomes law.

On the basis of the plan adopted by Government, the People's Commissariats establish the mandatory production programme for each of their establishments.

The working people of the Soviet Union not only take part in the discussion and drawing up of the plans, but are also vitally interested in their fulfilment. The production programmes laid down by Government are the minimum of what must be accomplished. It is a matter of honor for the workers of every factory to overfulfil their plan. Premiums are awarded to individual workers and factory managers who succeed in overfulfilling the plan.

7. The foremost people in industry, agriculture, transport, education, art, trade and other spheres of activity are accorded high honors and enjoy great popularity. Thousands of them have been decorated by Government for their exemplary work.

The Principal aim of planning in the Soviet Union is to ensure the further development of the national economy, to raise the cultural level of the country and improve the material conditions of the population.

All tasks included in the plan are based on the maximum introduction of the latest achievements of science and technology, on the most rational and comprehensive utilization of the country's natural resources, and on making human labour easier and increasing its efficiency.

This cannot be accomplished without the active participation of the country's scientific forces in the work of planning and without the development of the country's scientific institutions.

A component part of the plan is the system of technical and economic indices, which has been elaborated for all

branches of the national economy. These indices prescribe the technological standards, the expenditure quotas for raw materials, fuel and supplies, the proper utilization of equipment, and the basic quality standards of goods produced.

These indices are worked out on the basis of the experience of the foremost industrial establishments both in the U.S.S.R. and in other countries and they aim at gradually raising the whole of the national economy to ever higher technical standards.

One of the most important aspects of planning is the study of the country's natural resources, their effective utilization and the proper distribution of the thousands of new establishments that are to be built.

Finally, it should be mentioned that a number of important economic problems requiring prompt solution arise in the process of planning. These problems deal with the establishment of definite proportions in the development of the various branches of industry, the correlation of prices, the working out of the economic basis for new construction work, etc.

8. The staff of the State Planning Commission of the U.S.S.R. includes prominent engineers, technical experts, geologists, physicists, economists and specialists in other fields. Besides, all the People's Commissariats, the various planning organizations and the State Planning Commission of the U.S.S.R. invite the Academy of Sciences and other scientific research institutions to collaborate in the work of drawing up the plan. As a result of this joint work, the national economic plans of the Soviet Union serve as a powerful means of introducing the achievements of science into all branches of economy and all spheres of cultural endeavour.

Hundreds of scientific research institutions have been founded in the U.S.S.R. and many of them have gained world-wide repute. The work of Soviet mathematicians and geologists, and the work of the Institute of Experimental Medicine, in particular, enjoy well-earned fame. All scientific research institutions are financed by the State.

Drawing up the plan is only the first stage of the work of planning. Execution is no less important. This depends primarily on the proper organization of the work of the millions of people who have to fulfil these plans.

Government organizes constant control over plan fulfilment, thus ensuring the timely carrying out of the plan. But this control is not the function of State organs alone. The working people themselves take part in it. Figures on plan fulfilment in the key industries are published in the newspapers and are thus available to the general public.

Government closely follows the course of fulfilment of the plan, directs the activities of all State and co-operative organizations and, when necessary, renders assistance to them.

The instructions and assistance given by Government are a tremendous mobilizing and organizing factor not only in respect to those industries or establishments for which they are intended but for the entire national economy. A few years ago the coal industry displayed a tendency to lag behind. Government and the Central Committee of the Communist Party called together the best miners for a conference in Moscow. The speeches of these rank-and-file workers revealed the cause of this lagging. On the basis of the factual material supplied by this conference, Government ordered that the system of wages should be revised, and engineers and technicians should be assigned work.

directly in the pits. These measures soon brought results—the coal output began to climb, increasing by 23 per cent in one year.

Besides assistance in the form of instructions, advice and the assignment of additional forces, Government, in the case of many factories, allots additional funds and materials and extends the scope of capital construction.

This day-to-day supervision and assistance is one of the most important and decisive factors of planning in the Soviet Union.

9. The Soviet Union, the only country in the world where planned economy reigns supreme, is developing at a rate unparalleled by any other country in the world. A comparison of the development of industry in the Soviet Union with that of the principal capitalist countries in the period from 1913 to 1938 shows that while in the capitalist countries industry is practically stagnant at pre-war level, exceeding it at times by no more than 20-30 per cent, the industry of the Soviet Union has surpassed the pre-war level more than ninefold. While the world output of wheat has increased by 26 per cent since 1913, in the Soviet Union it has increased by 114 per cent. The yield of cotton in the U.S.S.R. increased by 242 per cent during this period, while the increase in the world output was only 30 per cent ; the output of sugar-beet in the Soviet Union doubled, while the world output rose only by 26 per cent.

The advantages of planned economy have also found expression in the steadfast improvement of the material conditions and the rising cultural level of the population.

The steady growth of industry, agriculture, transport, education, etc. has led to the fact that every year hundreds

of thousands of people are being drawn into the active life of the country. There were 22,000,000 industrial workers and employees in the U.S.S.R. in 1933, while by 1938 this number had risen to 28,000,000. During the same period the national payroll increased from 34,953,000,000 roubles to 94,425,000,000 roubles. The average annual earnings of industrial workers increased from 1,513 roubles in 1933 to 3,447 roubles in 1938. The monetary incomes and incomes in kind received by the collective farmers have also shown a marked increase during these years. The best indication of the growth of the country's public wealth is the national income, which has mounted from 48,500,000,000 roubles in 1933 to 105,000,000,000 roubles in 1938.

Material happiness always rests on figures, as the French writer Balzac justly wrote. The figures cited above illustrate the growth of the might, wealth and culture of the first Socialist state in the history of mankind, a country run according to plan.

The private ownership of the means of production has been abolished in the Soviet Union. The means of production are the property of the whole people. Hence, every enterprise is operated not with a view to increasing the profits of a private owner, but in the interests of the whole people.

The steady improvement in the standard of living of the working people creates an unlimited home market. The continuous growth of the incomes of the working people ensures a ready market for the ever-increasing output of Soviet industry and agriculture.

The abolition of the private ownership of the means of production and the concentration of the administration of the national economy in the hands of the State provide the necessary conditions for the harmonious development of all

industries. This excludes the possibility of over-production in any branch.

And, finally, a factor of vital importance is the moral and political unity of the Soviet people, the absence of exploitation, the deep interest of all the working people in the development of their country, their branch of industry, their factory or their institution. The direct connection between the growth of the country's public wealth and the material standards of each working man is so obvious that it serves as a powerful stimulus for the active participation of the whole people in the administration of the country in accordance with a uniform Socialist plan.

PART II

SOVIET INDUSTRY

AND

COMMUNICATIONS.

WHO DIRECTS SOVIET INDUSTRY?

BY

N. SMETANIN

1. The Socialist revolution. 2. Wealth of the country.
3. Commanders of the industry. 4. Promotion to workers. 5. New record. 6. The reward.

The industrial development of the U.S.S.R. calls for increasing numbers of administrators with a good knowledge of the processes of production and ability to direct them.

During recent years Soviet industry has grown considerably. Its aggregate output is now second only to that of America.

Many new branches of production, unknown to Russia in Tsarist times, have sprung up in the last ten years. They are the chemical, aircraft, automobile, tractor and machine tool industries, to mention only a few.

How was it possible to train the necessary people to administer these thousands of new plants? Where did they come from? What manner of people are they?

1. *The Great October Socialist Revolution abolished exploitation in the Soviet Union. The workers, peasants and laboring folk generally became the masters of all the wealth of the country. Tens of millions of people who before the revolution were unenfranchised and down-trodden came to take an active and regular part in the administration of the State. Their ranks have produced*

many talented organizers and directors of industry, transport, and agriculture, and many gifted workers in the field of art and culture.

The administration of the country and its industry was thrown open to women, who constitute half the population and who in Tsarist times were allowed no share whatever in public life. The revolution has conferred upon women equal rights with men in law and in fact. There is no branch of Government, industry or cultural effort in the Soviet Union today in which women do not take an active part.

The numerous people of the U.S.S.R. who under the Tsars languished in a state of colonial slavery have been emancipated from national oppression and, with the assistance of the Russian people, have built up their own industry and a new cultural life. These people are also taking an active part in the work of Socialist construction, and their ranks are constantly producing talented leaders.

The vast majority of the directors of Soviet industry were once rank-and-file workers. They secured promotion owing to their abilities and the initiative they displayed in production. They are people reared in the new Socialist technique; they strive to get the very utmost out of the technique and to produce the largest possible quantity of goods of the best quality for the benefit of their country.

2. The national income of the Soviet Union is entirely at the disposal of the working people. Part of it goes for the further economic development of the country, the remainder to satisfy the needs of the people. The richer, therefore, the U.S.S.R. grows, and the more its industry and agriculture produce, the greater becomes the well-being of its citizens and the higher their standard of living. Hence the Soviet citizen

is interested in multiplying the wealth of his country, and he therefore strives to increase productivity of labor and to raise his own level of education and technical knowledge.

In this, of course, he has the assistance and encouragement of the State, which assigns vast sums to educational establishments for the training of skilled forces. Whereas 559,000,000 roubles were assigned from the budget for education in the fiscal year 1925-26, over 20,000,000,000 roubles, or nearly forty times as much, were assigned in 1938. About one-third of this sum was designed for the training of skilled forces.

The absence of a degree or diploma is no bar to promotion. There are plenty of directors of huge industrial plants and superintendents of shops and departments who have not yet finished their education but who have displayed talent in the practical processes or in the organization of industry. Individual tutors, prominent experts and even professors are often assigned to such people to help them to acquire the necessary knowledge in the shortest possible time.

3. Some idea of the rapidity of advancement and development of new commanders of industry may be obtained from the story of my own life.

I was born the son of an oven-mason, whose earnings were very meager. Like the majority of workers in Tsarist times, my father had no opportunities for education and no chance of transferring to a more skilled and lucrative profession.

4. *The promotion of workers to executive posts was something almost unthinkable in the factories of Tsarist times. The owners preferred to invite experts from abroad for this purpose. In the Skorokhod shoe-*

factory, for example, all the foremen and shop superintendents were Germans.

I first went to that factory in 1918, after my father died. Shortly after the revolution an apprenticeship school was opened in connection with the factory, and I joined it with the object of improving my qualifications.

After leaving this school I became a laster. This operation was used to be performed by hand. After the factory was reconstructed in 1930, it raised its output from two million to twenty-two million pairs a year, and I was put on a lasting machine.

I studied the machine very thoroughly and came to the conclusion that my job could be done much faster without injury to the quality of the product. And by 1932 my output had increased very considerably.

In 1935 I read in the newspapers about the methods of work instituted by Alexei Stakhanov, a coal hewer in the Donbas, and the high productivity of labor he had attained. This gave me the idea that if we in the shoe trade were to adopt Stakhanov's methods, we too could raise our output considerably and supply the country with far more shoes than before.

I began to study my machine more carefully, to probe into all its "secrets" and potentialities, and on September 21, 1935, I established a record: I lasted 1,400 pairs of shoes in one shift, when the standard output was 680 pairs.

This was a historic day in my life. The news of my record soon became known all over the factory. I received the congratulations of the workers, who presented me with a huge bouquet of flowers. I saw sincere pleasure depicted on the faces of my workmates.

This record started a regular movement for higher productivity of labor in the shoe factories of the country. Calculation of movement and economy of seconds became the watchword among the shoe workers. Very soon my record was beaten by other workers. I was sincerely pleased with their achievements, for it was all for the benefit of my Soviet country and it helped to increase its wealth and might.

I continued to strive to improve the processes of work, to raise productivity of labor, and thereby I considerably increased my own earnings.

5. *I soon established a new record—1,820 pairs in one shift.*

It made me happy to know that our people were receiving more shoes than formerly, thanks to my efforts and those of my comrades.

Government rewarded my initiative and achievements by granting me the Order of Lenin.

Meanwhile, I was studying very persistently and improving my technical knowledge.

Very soon I was appointed shop foreman, and a year later, assistant director of the factory.

In 1938, three hundred thousand voters of Leningrad elected me Member of the Supreme Soviet of the U.S.S.R. In May of that year I was appointed director of the Skorokhod factory, whose gates I had first entered twenty years earlier as a boy of twelve.

6. Today I have been promoted to the highly responsible post of Assistant People's Commissar of Light Industry of the U.S.S.R.

There are numberless workers like myself in our country who in a short time have passed from the bench to the management of industry.

I could mention dozens of my comrades, former rank-and-file workers in the leather and shoe trade, who have become directors of factories.

Take, for example, Salamanov, a leather worker, who in his spare time studied assiduously and acquired a higher technical education. He first became an engineer and then the director of a big leather works.

Another example is Zatulovsky, who was also a leather worker. He first qualified as a technician and then as an engineer. He is now the assistant chief of the Leather Industry Board of the U.S.S.R.

In a like manner people are developing in every branch of industry of the Soviet Union. These people are part of the wealth of the Soviet country. They are a pledge of the rapid growth of its might and power.

They love their country profoundly and are devoted to the service of its industry. They are never tired of studying and improving their proficiency in whatever post their people may promote them to. A feature that marks them all is their persistent effort to transmit their knowledge, experience and discoveries to their comrades and to help them in their development and advancement.

The Third Five-Year Plan of Economic Development of the U.S.S.R. (1938-42) envisages a further big advance in industrial development and in the mechanization of agriculture. This will demand large numbers of new administrators in the most varied fields.

The system of training and advancement in the Soviet Union is a guarantee that this demand will be fully met.

THE INDUSTRIAL MIGHT OF THE U.S.S.R.

BY .

I. BARDIN

1. The new base. 2. Welles' visit. 3. Revolution in production. 4. Heavy industry. 5. Oil. 6. Chemicals.

Tsarist Russia was an economically backward country. Her autocratic form of government acted as a brake on the development of her forces of production. This explains her national poverty and economic dependence on the more advanced capitalist countries despite her vast natural resources. To illustrate concretely the low level of her industrial development, suffice it to state that in 1913 Russia occupied the 15th place in the world in electric power production, 6th place in the output of coal, 5th place in pig iron and steel smelting, and 7th place in copper manufacturing. Many branches of industry, such as the production of aluminium, nickel, rare metals and synthetic nitrogen, did not exist at all. High-grade steels, ferro-alloys and calcium carbides were almost all imported, as were machine tools and other machinery.

The setback suffered by Russian industry during the war years was catastrophic. Beginning with 1915, the output steadily diminished until in 1920 it had dropped to a bare minimum, and in some cases come to a complete standstill.

1. The Soviet Government set up after the triumph of the Great October Socialist Revolution fully realized that the building of Socialism necessitated a strong industrial base, powerful enough to render the country independent, in respect to its technical and economic requirements, of the hostile

capitalist States encircling it, and resourceful enough to reconstruct the several branches of the country's economy including its industry and agriculture. The new base, once established, would lead to abundance of manufactured goods and agricultural produce, so that all demands of the population could be met.

The years 1919 and 1920 were the most difficult years for the young Soviet Republic. Enemies encompassed it on every side. It fought valiantly for its life on numerous fronts, against the White Guards and the forces of foreign intervention ; industry and transportation lay prostrate ; the people were famished and lacked the barest necessities ; the dire consequences of the Entente blockade were felt everywhere.

In this period of economic storm and stress, Lenin and Stalin organized the people for the struggle against intervention, starvation and blockade. They not only foresaw and formulated the problems awaiting solution by peaceful creative effort, but also prepared the ground for the work which this solution entailed.

This was the time when, under their leadership, two hundred scientists, engineers and technicians drew up a plan for the electrification of the whole country and the introduction of modern machinery as the basis of its economic life.

2. This was likewise the time when H. G. Wells visited Lenin in the Kremlin and discussed with him this very plan. On his return to England the famous writer referred to Lenin as "*the dreamer in the Kremlin*". To Wells the drafting of an electrification plan for a ruined and starving country, lacking even petroleum, was nothing but idle fantasy. The foreign bankers were of the opinion that without their credits

and other assistance the Soviet Republic would be unable to resuscitate its economy.

However, the realities of life upset these calculations. In the Soviet Union, where capitalist ownership of the means of production has been abolished, the entire national income is being devoted to a single purpose, namely, to increase the output so that the requirements of the population may be satisfied, to promote the welfare of the people and foster the country's economic development in accordance with a scientifically determined plan. This has enabled the Land of the Soviets firstly to restore its economic life, ruined by the curse of war, and secondly to build up a powerful industry equipped with up-to-date machinery.

By 1928 all branches of industry had been restored to pre-war capacity. At once construction of new modern factories and mills commenced on a large scale. The best types of machinery were acquired; West-European and American production methods were being mastered. A number of State organizations for the designing of construction projects were set up, the staffs of which included prominent foreign talent. Numerous Soviet engineers, particularly of the young generation, were sent abroad to study at leading industrial establishments. The adoption of the First Five-Year Plan by the Communist Party of the Soviet Union (Bolsheviks) and the Soviet Government ushered in a new epoch in the country's history. Its main provisions were the construction of numerous new factories and the economic opening up and development of new districts. Among the projects undertaken, primary importance was attached to the creation of a new industrial base located in the east of the U.S.S.R., and the building of the Urals and Kuznetsk Basin combine.

In addition to the Magnitogorsk and Kuznetsk steel mills, each of them of record proportions, the list of industrial

constructions in this area included numerous other plants—for the non-ferrous metal, the chemical and the machine-building industries. The scale of construction and the difficulties encountered in the organization of production on these projects had never before been paralleled anywhere in the world.

3. Proper distribution of industrial establishment is not the only accomplishment to the credit of the Communist Party and the Soviet Government. They also successfully tackled the problem of raising labour productivity, which was of the utmost importance to the country. The Communist Party fought energetically against bureaucracy, which shackled initiative at work and hindered active interest in their work on the part of the masses. Socialist emulation was broadly developed and breaches of labour discipline vigorously combated. The Stakhanov movement for greater labour productivity, which had its commencement in the coal industry, has since spread to all industries and taken hold of transportation and agriculture. Grounded as it is on the efficient operation of modern machinery, it has wrought a revolution in production.

The new constitution of the U.S.S.R. is the legal enactment of the achievements of its victorious working class, and of the socialist system of society in the country. Planned economy, free of crises and based on the socialist ownership of the means and instruments of production, the right of all to engage freely in creative work, the right to education, the opportunity afforded to every Soviet citizen to develop and apply his talents and abilities, the birth of a new attitude toward work, which is esteemed a matter of supreme honour, have served as the foundation on which the unparalleled success achieved in the transformation of people, society and nature itself is based.

Full of daring, the new Soviet technical intelligentsia is carrying out in real life the transition from the technique of the nineteenth century, and, in a number of branches of industry, from the technique of the middle ages, to the latest technological processes, the most developed that the mind of man has conceived. Much work was needed to train such a generation, and in this work the entire Soviet people, guided by the Communist Party and Stalin, its leader, participated.

4. The results achieved by socialist labour in heavy industry are especially significant, for the development of heavy industry is a most difficult task even under favourable conditions. An enormous amount of work has been accomplished in this direction. The formerly existing branches of heavy industry have grown several times over and many new branches have been established, including the production of automobiles, aircraft, tractors, harvester combines, high-grade steel, ferro-alloys, nickel, aluminium, magnesium, cadmium, cobalt, tin, a great number of rare metals, plastic material, artificial fibre, and industrial and synthetic rubber. In volume of output, the Soviet industry has moved from the fifth place in the world, occupied by Tsarist Russia in 1913, to the first place in Europe and second place in the world.

In the coal industry the output has increased 4.6 times comparing the output in 1913 with the output in 1937, the final year of the Second Five-Year Plan period. This industry has been completely re-equipped. The new coal districts in the east are likewise developing their production. The industry's degree of mechanization (88 per cent) is the highest of any country in the world. The comprehensiveness of this mechanization is a particularly important feature. Not only coal cutting but to a considerable extent all other operations, including preli-

minary work and the sinking of pits, have been mechanized. Constantly perfecting their old and designing new models, the Soviet mining machinery plants supply the country's coal industry with all the modern equipment it needs.

In the Soviet Union the highly important problem of the sub-terranean gasification of coal has been solved in its technical and practical aspects. By the application of this convenient form (gas) the miner's arduous toil is thus eliminated. Coal gasification has already been placed on a sound basis in the U.S.S.R.

5. The oil industry has fully mastered the technique of deep-well and high-speed drilling. The old oil fields are being exploited to the best advantage. The continuous prospecting of Soviet geologists for oil deserves particular mention. Their efforts have been crowned with great success: new oil fields have been located and equipped for production in the Urals and the Volga district. Sulphur-bearing oil (mined in the Bashkir Republic) is being refined with considerable success. Cracking and polymerization have made it possible to obtain high-grade aircraft fuel.

Compared with the output of Tsarist Russia, the manufacture of iron and steel has grown more than fourfold. *This increase is likewise the result of the introduction of modern machinery and methods.* Powerful new, completely mechanized aggregates, blast furnaces, open hearth furnaces, blooming mills and rolling mills of various descriptions have been installed and their operation is being mastered by the Stakhanovites.

High-grade steels and electro-metallurgical alloys are being produced on a large scale. This has enabled the U.S.S.R. to develop its machine-building, aeronautical, automobile and tractor industries and to equip the heroic Red Army with the most up-to-date armament, so as to deal effect-

ively with the powerful enemy who ventured to encroach on Soviet territory.

The U.S.S.R. already occupies the second place in Europe and third in the world in the manufacture of aluminium. The building of nickel plants is proceeding apace, assuring increased nickel smelting. Production methods of other non-ferrous and of rare metals have also been mastered and, with the prospecting of the sources of raw materials, their output will rapidly increase.

Very important is the development of the production of numerous aluminium and magnesium alloys, of beryllium bronze and hard alloys with a tungsten and titanium base as well as the manufacture of articles made of tantalum, rubidium, caesium and other such metals. The steadily increasing practice of using substitutes (acid-proof cements, lining tiles, acid-proof earthenware and plastic materials) in place of non-ferrous metals is also worthy of note.

The gold output of the U.S.S.R. has advanced from the fourth place in world production (1913) to second place.

Signal successes have marked the road of electrification upon which the Soviet Union has entered. On the threshold of its third Five-Year Plan period, the capacity of the Soviet Union's electric power stations was 7.6 times that of Tsarist Russia, while the amount of electricity generated was 19.3 times the Tsarist figure. The coefficient of utilization of station capacity is from one and a half to two and a half times as high as in the capitalist countries. The Lenin Hydro-electric Power Station on the Dnieper alone produces more electricity than did all the stations of Tsarist Russia combined.

6. Remarkable strides have also been made by the Soviet chemical industry which was still in its embryonic state before the revolution. Under the Five-Year Plans,

synthetic ammonia works have been built and put into operation in the South, the Central Districts and the Urals. The output of sulphuric acid has increased more than tenfold since 1913, that of superphosphate more than twenty-fold, etc. In the case of sulphuric acid, the increase is due to the erection and proper utilization of powerful towers as well as the application of Herreshop-Bayer contact processes. Soviet sulphuric acid plants are equipped with the latest mechanized ovens, electric filtration for the purification of the gas and powerful apparatus for the concentration of the acid. The Stakhanovites in these plants have increased the efficiency of the tower and contact processes. Cases are on record where the specified standards have been exceeded by as much as four hundred per cent.

No bakelite or other composition material was produced in Tsarist Russia. Today they are used to manufacture not only numerous industrial supplies but also general consumers' goods.

Whereas before the revolution the annual output of rayon was 140 tons, artificial fibre production has now become a large industry.

The manufacture of synthetic rubber from ethyl alcohol, using the method invented by the late Academician Lebedev, is of great importance in securing the Soviet Union's economic independence. Eighty per cent of all rubber required in the U.S.S.R. for any purpose whatever is now produced artificially in Soviet plants.

In Tsarist days the country's chief rubber product was rubber foot wear. Today the domestic production of rubber goods includes many other items, such as transmission and conveyor belts, hose and tyres. In 1938, 23 times as much rubber footwear was produced as in 1913. As the demand

for rubber goods for industry as well as for general consumption is rapidly growing, provision has been made to enlarge the raw materials supply base and build the necessary additional works. During the third Five-Year Plan several more synthetic rubber works were constructed.

Soviet engineers are tireless in their efforts to devise and master new, improved technological processes. In determining what method of mechanization is to be applied to any particular plant, quantity and quality of output are not the only consideration. Every endeavour is made to render working conditions as favourable as possible for the workers concerned. Thus, Soviet engineering talent is diligently applying itself to the problem of replacing pneumatic pick hammers and perforators by electric hammers and perforators, of introducing combines in working steep gradient coal seams, so as to do away with blasting operations and cave-ins.

The campaign being waged in the U.S.S.R. for the thrifty and complete utilization of raw materials, for the prevention of fuel, heat and electric power losses, and the elimination of all waste of human energy is bound to yield great economies in view of the tremendous size of the country, and these economies in turn will ensure an extra increase in output, which implies increased welfare for the people.

The rapid progress made by heavy industry in the U.S.S.R. has astonished the world. It is the result of the immense superiority of the Soviet Socialist system over the capitalist system. And this superiority has been made secure by the Stalin Constitution, which inspired the workers of the Soviet heavy industry to strive for new victories and for the accomplishment of the stupendous tasks assigned in the Third Five-Year Plan.

MAGNITOGORSK—A STUPENDOUS PROJECT

BY

A. BAIKOV

1. The Urals—Kuzbas problem.
2. A bold step.
3. Supply of raw materials.
4. Largest ore-mining enterprise.
5. Industrial plants

1. Tsarist Russia was an agrarian country, and industrially backward. But even that industry was extremely unevenly distributed throughout the country. Textile mills, for instance, were built only in the central districts, far from the sources of raw material. Oil extraction was concentrated almost entirely in Baku, and coal mining in the Donetz Basin (Ukraine). The principal iron and steel plants were concentrated in Southern Ukraine. This was practically the sole coal, iron and steel producing centre of Tsarist Russia : it accounted for nearly 90 per cent of the coal mined in the country and about 75 per cent of the pig iron produced.

This uneven distribution of industrial enterprises and their remoteness both from the sources of raw material and from the consuming districts caused heavy losses to the national economy of the country. Naturally, the Soviet Government, which has set itself the aim of developing the productive forces of the country according to a definite plan and along strictly scientific lines, has from the very outset dealt with the question of the rational distribution of industry throughout the country.

Lenin dealt with this problem as early as 1918. It was he also who at that time put forward the idea of building up a new coal and metallurgical base in the east of the U.S.S.R.—what was known as the Urals-Kuzbas problem. The project visualized the creation of a powerful iron and steel industry based on the iron ore deposits of the Southern Urals (principally of Magnitnaya Mountain) and the coal deposits of the Kuznetsk Basin.

This idea was further elaborated and put into practice on the initiative of J. V. Stalin.

Both the iron ore deposits of Magnitnaya Mountain and the coal deposits of the Kuznetsk Basin are extremely rich, and of a very high quality. The distance between them is about 1,250 miles, and, in order to utilize them to the best advantage, it was necessary to build two large industrial centres: an iron and steel and ore mining centre in the Southern Urals, and an iron and steel and coal mining centre in Western Siberia.

This vast project was realized during the period of the First Five-Year Plan. An official decision was promulgated by the Soviet Government on January 16, 1929, providing for the construction of the Magnitogorsk Iron and Steel Works on the basis of the previously drawn up plans. On March 10 of the same year work was started on this construction, and on February 1, 1932, pig iron began to flow from the blast furnace No. 1 of Magnitogorsk.

Simultaneously with the building of the Magnitogorsk plant, construction was going on in the Kuznetsk iron and steel works which started operation somewhat earlier than the former.

Professor Davis, an American engineer, wrote *a propos* of the Urals-Kuznetsk project at the time that, according

to preliminary data, the iron ore deposits discovered in the Magnitnaya Mountain district in the Southern Urals are the richest in the world. A considerable part of these ores do not even require concentration.

Professor Davis pointed out that the Soviet Government's plan to combine the exploitation of the Ural ore with that of the Kuznetsk coal, with the construction of two gigantic iron and steel plants at both ends, was one of the boldest and most stupendous projects ever undertaken in the history of the iron and steel industry.

This plan of the Soviet Government has now materialized.

The Magnitogorsk Combine mines iron ore for its own plants and for the Kuznetsk Combine. The Kuznetsk Combine, on the other hand, while receiving iron ore from Magnitogorsk, supplies the latter with coal mined in the Kuznetsk Basin.

The Magnitogorsk Works consists of a number of plants organized as a single administrative and economic unit with a huge output of iron and steel.

The central feature of the Combine is the iron and steel works with blast furnaces (production of pig iron), a steel smelting plant (production of steel in open hearth furnaces) and rolling mills, as well as a number of auxiliary shops.

Immediately adjoining the iron and steel works are the powerful mines where the iron ore is extracted and worked up. The neighbouring districts abound in deposits of limestone, dolomites, quartzite and fireproof clays. A special coke-chemical plant has been built for the production of coke.

The Combine includes also a plant for the production of fireproof materials (Dinas clay and chamotte) adjoining the iron and steel works.

3. The principal source of the iron ore is Atach Mountain, one of the four peaks of Magnitnaya Mountain, rising 2,017 feet above sea level. Its western slope is rich in magnetite deposits representing a huge lode amid the volcanic rock formations.

The presence of iron ore in Magnitnaya Mountain was known long ago. Ore in small quantities was extracted here as early as 1747. But at that time nobody had a clear idea of the significance of these deposits. The Mountain attracted very little attention. It was situated in a sparsely inhabited steppe region devoid of any forests, and there were no railways. The little ore that was mined was carted by horses to the Byeloretsk Works situated about sixty miles from Magnitnaya Mountain.

Prior to the World War of 1914-18, the output of ore from Magnitnaya Mountain never exceeded 50,000 tons a year. In those times all the Ural industries used only charcoal, and this necessarily limited the output.

All this has changed with the introduction of mineral fuel from the Kuznetsk Basin. The Kuznetsk coals coke well, have a small ash and sulphur content, and their known deposits reach hundreds of billions of tons. As a result, Magnitnaya Mountain has assumed a tremendous significance.

Thorough geologic surveys have established the amount of the ore deposits and their composition. It has been brought to light that Magnitnaya Mountain contains 450,000,000 tons of magnetite ore with an average content of iron amounting to over 60 per cent.

Due to the processes of erosion the top deposits have been largely transformed into easily restorable martite with a small sulphur and phosphorus content. Its average composition is the following : iron 64.47 per cent, sulphur 0.19:

per cent. and phosphorus 0.015 per cent. The deeper deposits contain more sulphur and less iron (an average of 58.34 per cent) but their phosphorus content is also small.

4. *One of the largest ore mining enterprises in the world has been built up on the site of these deposits.*

The mine is well equipped with modern machinery. All the processes of ore extraction are a hundred per cent mechanized. There are also crushing, washing, sorting and agglomeration plants attached to the mine.

In the past seven years the mine supplied 30,000,000 tons of ore to the Magnitogorsk and Kuznetsk Iron and Steel Works. At present it supplies annually 6,500,000 tons of ore ready for the blast furnaces. This represents 18 per cent of all the iron ore mined in the U.S.S.R.

In addition to the Magnitnaya Mountain deposits, the Combine has at its disposal the Komarovo-Zigazinsk iron ore, the known deposits of which reach 150,000,000 tons, and manganese ore deposits estimated at 2,600,000 tons.

The districts in the vicinity of the Combine abound in valuable minerals which are used as fluxes and fireproof and building materials.

The known deposits of these minerals include :—

Limestone	..	..	289,000,000 tons
Dolomite	..	..	2,700,000 „
Quartzite	..	..	6,000,000 „

The known deposits of fireproof clays and moulding sand reach scores of millions of tons.

Thus nature has fully provided the Magnitogorsk Iron and Steel Works and all its auxiliary plants with an abundant and uninterrupted supply of all the necessary raw materials for a long time to come.

5. *The Coke-Chemical Plant* consists of four batteries (276 ovens) of the Koppers-Becker system and covers the entire chemical cycle. At the same time it provides an enormous amount of high-caloried gas which is utilized for the open-hearth furnaces and for other purposes.

The Iron and Steel Works includes four blast furnaces with a volumetric efficiency of 41,670 cu. ft. each. The output per day of each furnace is over 1,000 tons of pig iron.

There are ten stationary open-hearth furnaces of 150 ton capacity each and four of 350 ton capacity each with a total hearth area of 9,648 sq. ft. Two more open-hearth furnaces of 350 ton capacity each have now been added.

The plant is equipped with a powerful blooming mill with two continuous billet-mills and six of the most up-to-date automatic merchant mills, including a wire-drawing mill of a design which is unique in the world.

Another powerful blooming mill is provided with a continuous billet-mill "720".

The huge Iron and Steel Works has its own

Central electric power plant ;

Steam power department ;

Mechanical shop, forge-shop, foundry and repair shop ;

Chamotte and Dinas brick plant ;

Chemical, electro-technical and thermo-technical laboratories ;

Railway, automobile and other transport facilities.

A huge reservoir, formed on the Ural River by the building of two dams, supplies the Works with water and feeds the water supply system which has a daily capacity of 132,000,000 gallons of water.

The Magnitogorsk Combine covers an area of 27 sq. miles in the valley of the Ural River.

By September 1, 1938, expenditures on the construction of the first section of the Combine amounted to 1,322,500,000 roubles.

The Combine employs 26,000 workers, engineers and technicians.

In the seven years following the beginning of its operation the Combine produced

Over 30,000,000 tons of iron ore ;

10,500,000 tons of coke ;

8,200,000 tons of pig iron ;

5,600,000 tons of steel ;

4,400,000 tons of rolled steel.

The Iron and Steel Works has been gradually increasing production, while the construction of the Combine has been going on all the time. At present the first section of the Combined is completed.

The following figures indicate the nature of its work in 1938 :

Output of pig iron—1,796,000 tons ;

Coefficient of volumetric efficiency of blast furnaces—0.90 ;

Average annual output of pig iron per blast furnace—449,000 tons ;

Output of steel—1,580,000 tons.

The output of pig iron at the Magnitogorsk Iron and Steel Works amounts to nearly a half (42 per cent) of the total output of pig iron in Tsarist Russia.

When the second section of the Magnitogorsk Combine is completed within the next few years, it will include the following :

A mining enterprise consisting of three powerful crushing plants, a washing and a concentrating plant, an agglomeration plant and a number of auxiliary plants ;

A coke-chemical plant with eight batteries (544 ovens) covering a complete chemical cycle ;

Eight powerful blast furnaces ;

Three steel-smelting shops with 29 stationary open-hearth furnaces (ten of 150 ton capacity and nineteen of 350 ton capacity) ;

Two blooming mills with continuous billet-mills " 720," " 630 " and " 450 " ;

Six merchant rolling mills ;

A rail and beam rolling mill.

The Combine will produce annually

8,500,000 tons of sorted iron ore ;

Over 4,000,000 tons of coke ;

4,500,000 tons of pig iron ;

5,000,000 tons of steel ;

4,000,000 tons of rolled steel.

The Magnitogorsk Combine is the largest iron and steel enterprise in the world. Its annual production of pig iron exceeds that of all the iron and steel plants of Tsarist Russia taken together.

In the beginning, when the construction of the Magnitogorsk Works first started, a camp town of white tents sprung up at the foot of Magnitnaya Mountain on the banks of the

Ural River. In these tents lived the builders of "Magnitka"—engineers, technicians, workers. Soon, however, the tents were replaced by wooden barracks, and these have in their turn been replaced by brick buildings.

Today Magnitogorsk is a city of hundreds of tall well-built houses, with a population of 250,000, an electric power plant, water works, scores of wide streets, squares, boulevards, parks, street cars and a good autobus service.

In 1938 the expenditures provided for in the city budget of Magnitogorsk included 8,856,000 roubles for educational purposes, and 19,185,000 roubles on public health.

An additional sum of 13,500,000 roubles was expended on education, public health, sports and social maintenance out of the budget of the factory committee of the iron and steel workers' union. Large sums are spent on these purposes by other public organizations, such as the trade unions of the building workers, miners, etc.

Magnitogorsk has two higher educational establishments: a mining and metallurgical institute and a pedagogical institute, forty secondary schools with 25,000 pupils, and pedagogical, industrial and medical training colleges.

In addition to these a variety of training courses function in the Works, such as courses for providing higher qualifications, factory apprentice courses, courses for the training of Stakhanovites, university and college preparatory courses. More than 60,000 workers completed these courses in the past six years. A sum of over 42,000,000 roubles has been expended on the maintenance of these courses.

The four main libraries of this new city have 230,000 volumes.

The city of Magnitogorsk boasts of a fine theatre with a seating capacity of 1,000, eighteen moving-picture houses, a circus, a large number of clubs, including the splendid iron and steel workers' club, which has a large stage and in which concerts are held regularly. Besides concerts by local musicians, recitals are given here by singers and musicians from the largest centres of the country, such as Moscow, Leningrad, Kiev, Tbilisi and Baku.

The population of Magnitogorsk, like the population of all towns and villages of the Soviet Union, receives expert medical aid free of charge. The city has seven polyclinics, six general and lying-in hospitals, 26 children's nurseries, a special children's polyclinic, ten women's and children's medical consultation centres, dispensaries, a camp-sanatorium for adolescents with accommodation for six hundred campers at a time, scientific sanitary stations, etc.

The City Soviet of Magnitogorsk devotes a great deal of attention to the development of sports. The facilities that have been provided for sports activities include two stadiums with a seating capacity of 16,000, an aquatic sports station on the Ural River, nine gymnasiums, a hunters' stand, and skating rinks in the winter. In the aeronautical club young people receive training in parachute jumping, gliding and flying.

This, in brief, is the story of an industrial giant and a large flourishing city that have sprung up in the course of a few years in a desolate and practically uninhabited district.

LIGHT INDUSTRIES

BY

D. KHAZAN

1. Nine branches. 2. Cotton. 3. Bonus. 4. Two girls' achievement. 5. 85,000 shoes daily. 6. Social Insurance Funds.

1. Soviet light industry—the industries producing consumers' goods—may be regarded as including nine major branches : cotton, linen, woollens, silk, knit-goods, leather and footwear, fur, glass and clothing. All these industries were in the charge of the People's Commissariat of Light Industry until January 1939, when a special People's Commissariat was formed to direct the textile industry. These two commissariats control only the large, machine equipped enterprises, the rest being locally-controlled.

The successful building of a modern heavy industry—that is, the industries which manufacture means of production—and the collectivization of agriculture have made it possible to reorganize light industry on up-to-date technical lines. Thus, in the two years 1936 and 1937 the textile industry was supplied with over 650,000,000 roubles' worth of new machinery, all of which was made in the Soviet Union.

Huge sums have been invested in building new factories in the light industries and reconstructing existing ones : 1,347,000,000 roubles during the First Five-Year Plan period and 5,618,000,000 rubles during the Second Five-Year Plan period.

The guiding principle in capital development in the Soviet light industries is to bring the manufacturing plants in closer proximity to the sources of raw material and to the consuming districts—particularly to the smaller nationality regions of the U.S.S.R.

In Tsarist times no industries existed in the border regions of Russia inhabited by the non-Russian nationalities, government deliberately treating them as nothing more than sources of raw material—as colonies intended to supply Russia proper with cereals, cotton and wool. Heavy industry was confined to the central districts of the country and to one or two other districts, such as the Donetz Basin and the Urals. The light industries—particularly textile—were also limited to a few central provinces.

The Soviet Government, in pursuance of its policy of creating real equality for all the nations and nationalities comprised by the U.S.S.R., has provided for the rapid industrialization of the border regions. Nowadays the national republics not only produce cereals and cotton; they also have heavy and light industries.

During the period of the two Five-Year Plans important new textile districts have been created in Central Asia, Siberia and Transcaucasia. A huge textile mill has been built in Tashkent, a mixed woollen mill in Barnaul, a large shoe factory in Novosibirsk and a number of glass works in Byelorussia and the Donetz Basin. Large textile mills have been built in Leninakan, Tbilisi, Kirovobad, Ferghana and elsewhere, and others were in course of construction.

Soviet light industry is striding rapidly ahead. Its gross output (calculated in 1926-27 prices) rose from 3,235,000,000 roubles in 1913 to 18,152,000,000 roubles in 1937—an increase of over 460 per cent. The number of workers employed in

the light industries grew in the same period from 794,900 to 1,887,000. Among the new workers, engineers and technicians there are tens of thousands of men and women belonging to the non-Russian nationalities of the U.S.S.R. to whom machine-industry was practically unknown in Tsarist days.

Labour productivity is steadily rising. Whereas in 1913 the value of the average output per worker in light industry was 4,070 roubles, in 1937 it was 9,690 roubles, this increase of over 130 per cent being achieved even though the working day has been reduced from ten or eleven hour in Tsarist times to seven hours today.

2. Cotton is the oldest and biggest of the light industries. In 1913 the total output of all the cotton mills in the country was 2,410,000,000 yds. ; by 1938 it had risen to 3,787,000,000 yds. The cotton industry employs 538,200 workers, 67 per cent of whom are women.

The linen industry increased its output from 130,000,000 yds. in 1913 to 295,000,000 yds. in 1938.

In 1913 Tsarist Russia produced 8,300,000 pairs of factory-made shoes ; the output in the Soviet Union in 1938 was 189,500,000 pairs, or nearly 23 times as much. In 1938, three of the largest Soviet shoe factories—the Skorokhod Factory in Leningrad, the Paris Commune Factory in Moscow and the Mikoyan Factory in Rostov-on-Don—alone produced 39,400,000 pairs, or nearly five times the total output of all the shoe factories in Tsarist Russia in 1913.

The output of factory-made knit-goods and of clothing has also increased immensely.

A big industry has been built up for the primary treatment of hemp and flax. The production of cottonine and rayon has also made immense strides.

The output of leather substitutes has increased more than eighteen times during the last seven years (1931 to 1938). Natural rubber as a leather substitute is now entirely replaced by synthetic rubber. The Soviet Union formerly had no home supply of natural rubber, but it has made up this deficiency by building a big synthetic rubber industry, thus ensuring itself a sufficient supply of this important product. In addition, the cultivation of rubber-bearing plants is being developed on an extensive scale.

The rapid expansion of the sources of raw material for the light industries is strikingly shown in the case of cotton growing. In Tsarist times cotton was grown only in the Central Asiatic part of Russia. Now it has been introduced in Kazakhstan, Transcaucasia, the Ukraine and other southern districts, including some parts of the R.S.F.S.R.—for instance, the Krasnodar Territory, the Crimean Republic, the Daghestan Republic and the Stalingrad Region. The gross cotton crop in the U.S.S.R. in 1938 was 2,690,000 tons, as against 740,000 tons in 1913. In the U.S.S.R. cotton is cultivated farther north than in any other country, the plantations reaching the 48th parallel. *The Soviet textile industry is no longer dependent on imported raw material and uses exclusively home-grown cotton.*

No middlemen stand between the cotton-growers, organized in their collective farms, and the industry, which is State owned : the crop is sold directly to Government.

Hundreds of cotton-growing collective farms each had an income of over a million roubles in 1938. In the Izbakent District, Uzbekistan, alone there are fifty of these millionaire collective farms ; between them they netted 83,500,000 roubles for their cotton crop, of which 40,000,000 roubles consisted of Government bonuses for deliveries over and above the plan

and for extra grade cotton. Fifty cotton-growing collective farms in the Andizhan District, Uzbekistan, also netted incomes of over a million roubles each, as did forty collective farms in Armenia.

3. Notable is the Stalin Collective Farm in the Yangi-Kurgan District, Uzbekistan, which delivered 1.62 tons of Egyptian cotton from every acre of its plantation, receiving over 3,000,000 roubles in bonuses alone.

In the Voroshilov Collective Farm (Kasum-Izmailovo District, Azerbaijan), two teams, headed by Kurbanova and Nerimova, obtained a crop of 6.1 tons of cotton from every acre of land. Agja Alieva, a team leader in the Dimitrov Collective Farm, Kirovobad District, and a member of the Supreme Soviet of the Azerbaijan Republic, picked 42.6 tons of cotton from an area of 7.4 acres. Her year's earnings were 10,000 roubles in cash, in addition to produce.

The technical re-equipment of the Soviet factories demanded workers of higher knowledge and qualifications. The Soviet Government established a minimum of technical knowledge required of all workers, varying with the different professions and trades, and set up an extensive system of educational and training courses to impart this knowledge and professional skill. In 1937, 188,500 people employed in the light industries attended spare-time technical minimum courses conducted at the expense of the State, and in that year 301,000 workers passed the State technical examinations in their various trades and professions. In addition, the factories offer their workers extensive facilities for higher technical training—schools for foremen, assistant foremen and Stakhanovites.

In Tsarist Russia there were very few engineers in factories that now come under the category of light industries. Women

engineers were entirely unknown. Today the situation is totally different. In 1937, four branches of light industry alone—cotton, linen, leather and shoe, and furs—employed 35,300 engineers, of whom 7,700 were women.

In 1937, in the cotton textile industry of the Ivanovo Region, two women were in charge of trusts, three were directors and twelve assistant directors of large mills, 12 were shop superintendents, 53 engineers, 193 junior engineers, and 110 forewomen. Most of these women had been ordinary workers and had been promoted as shockworkers and Stakhanovites.

The spread of the Stakhanov movement has led to a big increase in labor productivity. In the light industries this movement was initiated by two girls, weavers in the Nogin Mill in Vichuga—Evdokia Vinogradova and her namesake, Maria Vinogradova.

4. These girls, having made a thorough study of the technical side of their jobs, were the first in the Soviet Union to operate 100 automatic looms at a time. A little later they each began to operate 140 looms, then 216, and in 1938 as many as 285 looms.

After the Vinogradovas had made their record, the Stakhanov movement spread far and wide in the light industries, and hundreds of men and women have been granted distinction by Government for their Stakhanovite work. The Soviet people have shown their regard and esteem for their outstanding workers by electing many of them members of their highest legislative bodies. Evdokia Vinogradova is a member of the Supreme Soviet of the U.S.S.R. and Maria Vinogradova of the Supreme Soviet of the R.S.F.S.R. Claudia Sakharova, a Stakhanovite weaver, is the youngest member of the Supreme Soviet of the U.S.S.R. She was only nineteen

at the time of her election, and was assistant director of a mill with over 11,000 employees.

Another member of the supreme legislature of the U.S.S.R. is a weaver by the name of Gonobobleva, a woman of fifty, who before the Revolution was semi-literate.

In 1936-37 she became an outstanding Stakhanovite by establishing a new record in labour productivity, operating non-automatic looms simultaneously. Gonobobleva is now director of the Kirov Mill, Ivanovo.

Maijura Abdurakhmanova is an Uzbek. She is only twenty. She saw a machine for the first time in her life in 1934, at the training school of the Stalin Textile Mills, then in course of construction in Tashkent. In 1935 she began work as a spinner. Within a month she was already operating two ring spinning machines at a time, a month later three, then four, and finally five. She has been elected to the Supreme Soviet of the U.S.S.R. and is now studying at the Industrial Academy, training to become a mill manager.

The initiators of the Stakhanov movement in the shoe industry were Smetanin, a worker in the Skorokhod Factory, Leningrad, Yashin, a worker in the Paris Commune Factory, Moscow, and Gomulko, a worker in a Kiev shoe factory.

5. Nikolai Smetanin, who not so long ago was a lasting machine operator in the Skorokhod Factory, having made a thorough study of his machine, began to last 2,200 pairs of shoes in his 7-hour shift, which was over three times the standard rate of 700 pairs per shift. Smetanin showed his ability not only in his trade, but also as an organizer and manager of production. He was soon appointed assistant director and then director of the Skorokhod Factory—the largest shoe factory in the country, which produces as much

as 85,000 pairs daily. Now he is Assistant People's Commissar of Light Industry of the U.S.S.R. Sometanin is a member of the Supreme Soviet of the U.S.S.R.

In 1938 the volume of State, co-operative and collective farm retail trade reached 162,973,500,000 rubles, as against 61,289,200,000 rubles in 1933. The sales of high-grade goods have increased considerably. The sales of cotton fabrics by the State and co-operative stores amounted to 5,500,000,000 rubles in 1937, as against 2,100,000,000 rubles in 1929—a 160 per cent increase; clothing sales totalled 6,600,000,000 rubles—a 90 per cent increase; knit-goods sales totalled 2,300,000,000 rubles—a 130 per cent increase; and sales of footwear, 4,100,000,000 rubles, an increase of 170 per cent.

This increase in the volume of trade is to be attributed to the rising standard of living of the population.

In the U.S.S.R. unemployment has been totally eliminated. The average number of employed persons per family has sharply increased, which means a corresponding increase in the average family income. At the same time the average wages of workers in the cotton industry increased, between 1928 and 1938, by 309 per cent; in the linen industry by 373 per cent; in the wool industry by 260 per cent; in the silk industry by 261 per cent; in the knit-goods industry by 207 per cent; in the leather and shoe industry by 200 per cent; and in the glassware industry by 288 per cent. The average monthly earnings of many shock workers and Stakhanovites are as much as 1,000 rubles and over.

To the real earnings of Soviet workers must be added the State expenditures for the education of their children, for the workers' recreation and vacations, for cultural services, medical services, security in old age, and so on. These

services rendered by the State, free of charge, amount on the average to about 22 per cent of the income of the worker's family.

6. Mention should also be made of the social insurance funds, which are controlled by the trade unions. In 1938 insurance benefits paid by the Moscow and Leningrad Cotton Workers' Union amounted to 108,600,000 rubles. Of this sum 34,500,000 rubles were spent on payment of sick benefits ; 28,300,000 rubles were paid to women employees in maternity benefits and 4,350,000 rubles for the acquisition of layettes and as nursing grants ; 3,150,000 rubles were spent on extra-school services for workers' children ; 2,500,000 rubles on grants to parents ; 5,850,000 rubles on the construction and upkeep of Young Pioneer camps and children's sanatoria ; 2,450,000 rubles on dietetic feeding ; 10,440,000 rubles on rest homes, sanatoria and health resorts 1,080,000 rubles on facilities for sports, mountain climbing, etc., and 5,300,000 rubles on invalid pensions.

In Tsarist times the Russian peasants, because of their poverty, bought very little manufactured goods. Their clothes and linen were home spun, on primitive looms, and home woven. Leather shoes were considered a luxury ; most of the peasants wore bast shoes, wrapping their legs in strips of coarse linen kept in place by string. Socks and stockings were practically unknown in the Russian village.

Nowadays the peasants have become collective farmers, and the majority of them dress in the town fashion. The younger people even dress smartly ; country girls are buying good shoes, stockings and stylish dresses.

The rising standard of living of the people of the U.S.S.R. is creating a growing demand for manufactured goods, and,

in spite of the big increase in the production of fabrics, footwear and knit-goods, the output does not yet cover the demand.

Under the Third Five-Year Plan, the output of various consumers' goods was to be increased by 50 to 100 per cent. The year 1942 was to show an output of 5,341,000,000 yds. of cotton fabrics (42 per cent more than in 1937), and 235,000,000 pairs of leather shoes (43 per cent more than in 1937). The output of woollen cloth will be 67 per cent more than in 1937.

There would be a big increase in the output of textile machinery. The mills would be equipped with the most up-to-date machinery, including continuous process machines, automatic looms, etc.

Further progress was envisaged in the Third Five-Year Plan with respect to bringing the light industries closer to the sources of raw material and fuel. A number of new textile mills were to be started, including cotton mills in Barnaul, Novosibirsk and the Kuznetsk Basin, a spinning mill in Leninakan, the second section of the Tashkent Textile Mills, and cloth mills in Kiev and Semipalatinsk. A number of textile mills were to be erected in Western Siberia and the Kazakh Republic. Numbers of knit-goods and hosiery factories, silk mills, flax mills, tanneries and shoe factories were also to be built throughout the country.

The Third Five-Year Plan was to bring about a further rise in the standard of living of the people of the U.S.S.R. by more fully meeting the demand for all kinds of goods and produce and for wider material and cultural services.

SOVIET REPUBLICS OF NON-RUSSIAN NATIONALITIES-INDUSTRIAL PROGRESS

BY
M. PAPYAN

1. Own industry. 2. Tempestuous rate of development.
3. Increase in native workers. 4. In Armenia.

More than three-quarters of the entire industry of Tsarist Russia was concentrated in its central provinces, in the Ukraine and in the Baku oil district.

The non-Russian borderlands of the Empire were looked upon by Russian and foreign capitalists alike as nothing more than sources of raw material and markets for the sale of manufactured goods.

When it came into power, the Soviet Government abolished the regime of national oppression and established the equity of all nationalities. To give effect to this national policy, it had to put an end, in the shortest possible time, to the economic and cultural backwardness of the nationalities formerly oppressed by Tsarism.

Accordingly, the Communist Party and the Soviet Government designed and enacted a series of measures which enabled the districts inhabited by the backward nationalities to overtake the more developed central regions of Russia.*

*The most comprehensive and authoritative study of the Communist approach to these problems is to be found in *Marxism and the National and Colonial Question* by Joseph Stalin. (Lawrence & Wishart Ltd., 3/6 net).

Many industrialization measures were included. During the first two Five-Year Plan periods (1928-37) the former "borderlands" of the country witnessed the construction of numerous industrial establishments and the growth of large forces of workers and professional people of native stock. Without all this, national equality would be but a sham, an empty, meaningless phrase.

The Republics of the non-Russian nationalities comprised in the U.S.S.R. have fundamentally reorganized their national economy and have attained gigantic industrial expansion. From agrarian adjuncts, serving as raw material bases for the industries of Russia proper, they have been turned into mighty centres of Socialist industry. Vital centres of the iron and steel, coal, oil, machine-building and electric-power industries have sprung up in the Soviet East.

1. There is no Republic or region of a non-Russian nationality in the U.S.S.R. that has not founded its own industry during the last ten years. This is equally true of both the large and the small Republics and regions.

Let us, for example, consider the Bashkirian Autonomous Soviet Socialist Republic, whose dimensions are relatively small. The funds invested in the national economy of Bashkiria in 1932 alone equalled the total sum invested in this region by Tsarist Russia in half a century. During the Second Five-Year Plan period (1933-37) capital investments in the national economy of this Republic exceeded 1,000,000,000 rubles. Bashkiria, which before the Revolution had practically no industrial enterprises at all, has now built up scores of new factories, including the well-known Ufa Motor Works and an oil cracking plant. The Beloretsk and Daimak Works have been totally reconstructed and transformed into modern enterprises. This republic has also been

found to contain oil, and the Ishimbai and Tuimazy oil fields are already being successfully operated.

Let us now turn to another republic—Kazakhstan—one of the eleven constituent Republics of the Soviet Union. This is a vast country, occupying a territory of 1,060,000 sq. miles, and is exceedingly rich in valuable minerals. It includes the huge Emba oil fields, second in size to the Baku fields. Its copper deposits constitute 60 per cent, and nickel deposits 50 per cent of the total known deposits in the U.S.S.R. Kazakhstan has also huge coal deposits. Recent prospecting revealed immense phosphorite deposits and chromite beds. They are among the richest in the world. The metal content of the Altai gold, silver, zinc and copper ores is of the highest.

Yet until the Revolution, all these riches lay buried in the ground untouched. Kazakhstan was a backward region whose nomad population were engaged almost exclusively in rather primitive cattle breeding. Meat and leather were the sole products they provided for Russia's central regions. There were no industrial enterprises of any account, no railroad and no telegraph or telephone service.

Today the Kazakh Soviet Socialist Republic represents a land of new constructions. A large coal industry has been created here with Karaganda as its centre. Numerous oil fields are being exploited; the erection of the gigantic Balkhash copper smelting works has been completed; the Ridder Lead Works has been entirely reconstructed; and a huge lead factory, the giant of the Soviet Union's lead industry, has been erected at Chimkent, while several new chemical and other works have been added to the Republic's industrial plant.

2. The tempestuous rate of development of the Republic's industries may be judged by the fact that during the period

of the Second Five-Year Plan, lead smelting in Kazakhstan increased twelve-fold, and in 1937 constituted 75.3 per cent of the total lead smelted in the Soviet Union, as against 30.72 per cent in 1932.

A roadless country in the past, Kazakhstan, under Soviet rule, has been covered with a whole network of overland communication lines, including numerous railroads whose mileage totals 4,160 miles, while 3,700 miles of waterways have been made available for navigation.

Bordering on Kazakhstan is Uzbekistan, one of the Soviet Socialist Republics situated in Central Asia. In the past, this Republic like all the other borderlands inhabited by non-Russian peoples, was a Tsarist colony. It supplied the central regions of the Empire with cotton, which the Tsarist authorities did not allow to be woven or even spun in the regions where it was produced. Today Uzbekistan has a number of big textile mills. Special mention must be made of the huge plant in Tashkent, the Republic's capital, which is equipped with 112,000 spindles and 3,246 looms. A second section of this plant is now under construction, upon completion of which the plant will have in operation 211,000 spindles and 6,952 looms. Many electric power stations, plants manufacturing agricultural machinery and implements, silk reeling mills, clothing factories and other industrial establishments have also been built in Uzbekistan. Not far from Tashkent, on the banks of the Chirchik River, a combined plant producing electricity and chemical products is now under construction. It consists of a hydro-electric power generator with a capacity of 750,000 kilowatts, which will supply cheap energy to the industrial establishments of Tashkent, and of a fertilizer factory whose products will go to enrich the Republic's cotton fields.

3. The industrial development of Uzbekistan has led to a considerable increase in the number of the republic's native workers and professionals. Over 100,000 people are now employed in its large scale industries and on construction. More than half of these are skilled and semi-skilled Uzbek workers. An Uzbek technical intelligentsia—technicians and engineers—has also come into existence.

Similar records of achievement may be exhibited by the other non-Russian nationalities of the U.S.S.R. Industry is rapidly expanding not only in these Republics which formerly were agrarian colonies pure and simple, but also in Azerbaijan and the Ukraine, which even before the Revolution had quite a few industrial establishments.

In Azervaujan, the old Baku oil industry, dating back from pre-revolutionary days, has been entirely reorganized. As a result, the annual oil yield has increased three times in comparison with 1913, the gas yield 69 times, and the production of gasoline 48 times. In recent years, a number of new oil fields have been prospected and are now being extensively exploited. In 1938 the new fields and the new wells on the old fields accounted for 83 per cent of the total oil output.

The Donetsk coal basin, the chief purveyor of coal for the whole country before the Revolution, is located in the Ukraine. Now, with the development of the Kuznetsk coal fields in Siberia, the Karaganda coal fields in Kazakhstan and local coal fields in Central Asia, Georgia, the Far East and in other districts, the Donetsk basin's proportionate share in the Soviet Union's output of coal has, naturally, diminished. However, as far as absolute figures go, the mining of coal in the Donetsk basin is increasing from year to year and has more than tripled in comparison with pre-war time. Today,

the Ukrainian Soviet Socialist Republic produces twice as much coal as all Poland.

The Ukraine also had an iron and steel industry before the Revolution. This, too, has been thoroughly reconstructed during the years of the Soviet rule. In place of the old blast and open hearth furnaces and of the old rolling mills, new thoroughly modernized equipment has been installed.

Many first-class new works, such as the Zaporozhye Steel Mill, the Azov Steel Mill, the Krivoi Rog plant and others, have been erected. During the years of the second Five-Year Plan alone (1933-37), the Ukraine's output of pig iron was more than doubled. One plant—the Kirov iron and steel mill in Makeyevka—produces twice as much pig iron as all the iron and steel mills in Poland put together. During this same period the production of steel in the Ukraine almost tripled. Ukrainian mills produce as much steel annually as Japan and Poland put together. In comparison with 1913, the machine-building industry in the Ukraine has grown thirty-fold and the generation of electric power 18.3 fold. The Lenin Hydro-Electric Power Station on the Dnieper, built under the Soviet rule, alone supplies more electric power than did all the power houses of Tsarist Russia in the aggregate.

4. The author of these lines is an Armenian, and it is therefore only natural that he should want to illustrate the industrial expansion in the Republics of the non-Russian nationalities by the example of Armenia.

Until 1914, the industry of Armenia, in the main an agrarian country, was extremely backward and even primitive. Its few factories were hardly more than handicraft shops.

Most developed at that time were the copper industry, the production of alcoholic beverages, and cotton ginning by handicraft methods.

The inexhaustible natural resources of this mountainous country, with its rivers and lakes, and its colossal reserves of valuable minerals, were practically unexploited.

All the electric power in Armenia used to be supplied by two hydro-electric power stations with a total capacity of 250 kilowatts.

During the World War (1914-18) and the years in which the Armenian counter-revolutionary Party of the Dashnaks was in power (1918-20), Armenia's weak industry was altogether ruined.

Only Soviet rule, established in Armenia on November 29, 1920, put an end to its economic prostration. The initial period of economic revival has been followed by the Socialist industrialization of its national economy.

A number of hydro-electric power stations, with an aggregate annual output of 350,000,000 kilowatt-hours, have been built. All these are linked up into a single chain, which makes it possible to regulate the flow of electric power.

Extensive work is now under way to utilize the abundant waters of the huge Sevan Lake, situated high in the mountains, for which purpose a number of hydro-electric power stations are erected on the cascade system along the Zanga River.

At the same time the water discharged by the turbines will go to irrigate more than 321,000 acres of fertile soil.

Construction of water plants has made possible the extensive development of industry. New branches of industry

have been launched, and the old branches have been fundamentally reconstructed. Armenia's copper industry has made big strides. At present the annual output of the Alaverd and Kafan copper smelting works amounts to 10,000 tons.

The Republic also has large chemical works. In Erevan, the capital of Armenia, a huge synthetic rubber works has been erected. Some time ago a new cement factory, producing 114,000 tons of high-quality material annually, has sprung up on the Davalin sands, at the foot of a long range of mountains rich in limestone.

A machine-building plant manufacturing engines and compressors is another addition to the Republic's industries.

A new tobacco factory manufactures 1,700,000,000 cigarettes a year. Armenia's canneries yearly put out 20,000,000 cans of preserved fruits and vegetables. The output of wine presses and distilleries, meat packing plants and other establishments of the food industry has also increased to a marked extent.

Two cotton ginneries have been built to deal with the rich cotton crops. Their capacity is 22,000 tons of cotton annually.

A huge textile plant, with large new spinning and weaving mills, forms the nucleus of a regular little town within the city of Leninakan. This plant has 117,000 spindles and produces 33,000,000 yards of textiles a year.

The leather and shoe industry has also undergone considerable development.

Erevan, which only recently used to amaze the foreign tourist by its winding, typically Asiatic streets and clay

hovels, has been transformed into a beautiful, well-planned city, really deserving of being a capital.

Under capitalist conditions nations required whole centuries to attain to modern modes of production.

With the impetus given by the October Socialist Revolution, our nations, formerly backward, needed little more than a decade to develop into flourishing Socialist republics, where exploitation of man by man and national oppression have been wiped out once and for all, where advanced Socialist industry and large-scale Socialist agriculture hold undivided sway.

CIVIL AVIATION

BY

V. MOLOKOV

1. Commercial. 2. 5,782 miles of airways. 3. Trunk lines. 4. First place in freight traffic. 5. Locust menace eliminated. 6. Polar service. 7. Expert flyers. 8. Aircraft production. 9. World-records.

Civil aviation, besides being an important means of transportation, is put to a variety of other uses in the Soviet Union. Thus, it is widely employed in agriculture, in forestry, in fishing and animal trapping, in surveying and prospecting, in the sphere of public health, in the exploration of the vast areas of the Soviet Arctic regions, etc.

But civil aviation in the U.S.S.R. has attained its greatest development as a means of transportation and communication. In the Soviet Union, where all the functions of transportation are co-ordinated in a single State plan, it has been possible to organize the transport system and plan its development on the basis of a thorough study of economic factors.

1. *Commercial aviation has become an effective integral part of the entire transport system of the U.S.S.R. and works strictly in cooperation with the other forms of transportation.*

Systematic construction of Soviet airlines was begun in 1922-23. After the first airline, Moscow-Gorky (formerly Nizhni-Novgorod), had started operation, the Soviet Union launched the development of airlines in the roadless regions of Central Asia, in the Ukraine, Siberia and Transcaucasia.

At that time this work was attended with difficulties resulting from the fact that the Soviet aircraft industry was but poorly developed and that there was a dearth of personal with operating experience.

4. *Still, in the years from 1923 to 1928, i.e., towards the beginning of the First Five-Year Plan period, the network of airways in the U.S.S.R. had increased in length from 260.4 to 5,782 miles.*

The construction of civil airlines assumed large proportions during the period of the First Five-Year Plan, which, as is well known, was fulfilled in four years. It was continued on even a larger scale during the period of the Second Five-Year Plan (1933-37).

As a result of this construction which has gone on continuously for many years, the entire vast territory of the Soviet Union has been covered with a wide net-work of airlines.

The following table shows the growth of this network :

Years	Total length of airlines, in miles			
1923	260
1928	5,782
1932	19,778
1933	33,046
1934	42,284
1935	47,900
1936	54,300
1937	65,888
1938	70,918

The planning and geographic distribution of the airlines in the U.S.S.R. aims primarily to meet the requirements of

national economy. The main task to be considered is that of building up a system of rapid transportation and of linking the central sections of the country with important industrial centres and with the outlying districts.

3. The main airlines operated by the Civil Aviation service of the U.S.S.R. are the three trunk lines : Moscow-Vladivostok, Moscow-Tbilisi and Moscow-Tashkent.

The trunk line Moscow-Vladivostok links the U.S.S.R. in Europe and its centre with the distant borderlands in the east, as well as with the important cities situated en route : Kazan, Sverdlovsk, Novosibirsk, Irkutsk, Khabarovsk, etc. A number of smaller airlines of great economic importance branch off from the trunk line. One of these is the Irkutsk-Yakutsk line, which is traversed in hydroplanes, following the course of the Lena River. This line is of vast importance as a means of traffic and communication with the Yakut Republic. The Khabarovsk-Alexandrovsk and Khabarovsk-Okha airlines, which connect the mainland with the Island of Sakhalin, are of equal importance.

The main lines link up in Moscow with the airlines Moscow-Leningrad, Moscow-Kharkov, Moscow-Kiev-Odessa, Moscow-Minsk and many others. This makes it possible to organize long-distance through-traffic, for instance, from Byelorussia and the Ukraine to the Far East ; from Transcaucasia to the Urals and Siberia ; from Central Asia to the central regions of the U.S.S.R.

The Moscow-Stockholm line, which was opened in 1937, has enhanced the international significance of the eastern trunk line. The Moscow-Stockholm line, which is operated jointly by the U.S.S.R. and the Swedish A.B.A. Company, connects with the airlines of Holland, Denmark, Belgium,

Great Britain and France. The Moscow-Vladivostok trunk line thus becomes the potential air route linking the shores of the Pacific and the Atlantic.

The Moscow-Tbilisi trunk line links the centre of the Soviet Union with the Ukraine, North Caucasus and Transcaucasia. A number of airlines branch off from this trunk line in the directions Tbilisi-Erevan, Tbilisi-Sukhumi, Tbilisi-Baku and others, connecting the Georgian, Armenian and Azerbaijan Republics.

The Ukraine also has a wide network of airlines, including, among others, the following : Kharkov-Dniepropetrovsk-Odessa, Odessa-Kherson, Kharkov-Mariupol-Berdyansk, Kharkov-Kiev and Kiex-Rostov-on-Don.

The Moscow-Tashkent trunk line links the centre of the Soviet Union with the republics of Central Asia.

It also covers the territory of northern Kazakhstan.

The Tashkent-Kabul line connects the U.S.S.R. with Afghanistan.

Many of the Central Asia airlines traverse desert and mountain country. The distance between Stalinabad and Khorog, for instance, usually takes thirty days to travel by land. An airplane covers this distance in two hours.

An airline was recently put into operation between Moscow and Alma-Ata. This is another trunk line, connecting the capital of the Soviet Union with the Kazakh Republic.

Airline communication has been rapidly developing in the vast territory of the Soviet North, where the airlines serve the purpose of helping to master the Great Northern Sea Route.

The extension of the network of airlines in the U.S.S.R. has been attended by a growth of the number of passengers and of the volume of freight carried by aircraft, as shown in the following table :

Passengers and Freight carried

Years	Passengers	Mail	Freight and baggage
1923	200	10	10
1928	7,000	100	100
1932	27,200	400	400
1933	42,800	2,000	1,400
1934	63,000	3,800	6,700
1935	106,700	6,500	10,200
1936	211,800	7,900	35,000
1937	178,300	9,100	36,900
1938	287,200	10,800	43,600

The airplane has definitely become a part of the life of the Soviet citizens. In addition to carrying passengers and mail the airplanes of the Civil Aviation Service transport spare parts of agricultural and other machines, rare elements, precious metals, precision instruments, perishable goods, medicines, various apparatus and instruments, concentrated food, etc.

4. *The U.S.S.R. holds first place in the world for freight traffic by air. The utilization of payload on civil airplanes amounts to 86 per cent of the entire payload capacity of the Civil Air Fleet of the U.S.S.R.*

In the Soviet Union airplanes are widely employed for the purpose of destroying field pests and of protecting forests from fires. In 1928 an area of 79,000 acres of cultivated fields and of forests was sprayed with chemicals from airplanes. In 1938 airplanes engaged in combating field and forest pests sprayed an area of 1,235,000 acres.

5. *With the help of airplanes the locust has been eliminated from its breeding places in Azerbaijan, Turkmenia and a number of other localities.*

There has been a steady increase in the area photographed each year from airplanes for the purposes of prospecting and cartography. Aerial photography is also increasingly used in connection with road-building and the reconstruction of cities.

Airplanes are employed to an ever increasing extent to convey specialists in cases when urgent medical assistance is needed in remote places, and in conveying patients who are in urgent need of special hospital accommodations.

In 1938 airplanes assisted in the destruction of the larvae of the malaria mosquito on an area of more than 7,410,000 acres.

6. The U.S.S.R. has created a special polar aviation service. Its functions are to guide ships along the Great Northern Sea Route, to reconnoiter for shoals of fish and marine animals, to study the meteorological and ice conditions in the Arctic, to furnish material for maps, and, finally, to provide means of transportation and communication.

The Soviet Civil Aviation Service is well staffed with a fine flying personnel. Many flyers and engineers of the Civil Aviation Service have been awarded high orders of merit by the Government. The leading posts in the Civil Aviation Service are occupied by first-class aviation experts. Thus, for instance, the post of Chief of the Polar Aviation Service is held by one of the conquerors of the North Pole—Pilot I. Mazuruk, Hero of the Soviet Union; the post of Chief of the Civil Aviation Service is held by the present writer; the post of Chief Inspector of the Civil Aviation Service, by Pilot M. Slepnev, Hero of the Soviet Union.

7. *A great number of outstanding flights bear witness to the superior skill of the Soviet aviators and the high level of development of aeronautics in the Soviet Union.*

We may mention the flights made by M. Vodopyanov, Levanevsky, M. Slepnev, I. Doronin, P. Lyapidevsky, N. Kamanin and other pilots, all Heroes of the Soviet Union, who saved the 104 members of the brave *Chelyuskin* crew; the flights in the Arctic made by Fahrikh, Makhotkin and others. In 1936 V. Chkalov, G. Baidukov, and A. Belyakov accomplished their flight along the extremely difficult route, Moscow-Arctic Ocean-Kamchatka-Island of Udd (now Chkalov Island). In the following year the heroic onslaught on the North Pole was crowned with success. A squadron of heavy planes piloted by M. Vodopyanov, V. Molokov, A. Alexeyev, P. Golovin, and I. Mazuruk made the flight from Moscow to the North Pole and, moreover, the participants of this expedition, headed by Academician Otto Schmidt, succeeded in consolidating their victory over the North Pole by setting up Papanin's scientific research station. Shortly after that feat V. Chkalov, G. Baidukov and A. Belyakov made their non-stop flight from Moscow to the U.S.A. via the North Pole, soon followed by M. Gromov, A. Yumashev, and S. Danilin who accomplished a similar transpolar flight from Moscow to the U.S.A. Finally, we may mention the latest record-breaking flights from Moscow to the Far East made by Kokkinaki in the airplane *Moscow* and by the women flyers V. Grizodubova, P. Ossipenko and M. Raskova in the airplane *Rodina*.

8. These achievements were made possible by the general advance of Socialist economy and by the successful accomplishment of the first two Five-Year Plans, as a result of which the U.S.S.R. has created its own powerful aircraft industry.

In the backward Russian empire of the Tsars there was no aircraft industry whatever. Soviet aviation at first depended entirely on import. But already towards the beginning of the First Five-Year Plan period the young Soviet aircraft industry had so far developed that it was able to supply the Air Fleet of the U.S.S.R. with planes and motors of domestic production.

The achievements of the Soviet aircraft industry particularly worth noting include the designing and manufacture of the airplane TSAGI-025. It was in airplanes of this model that V. Chkalov and M. Gromov made their record-breaking flights over the North Pole. At the Fifteenth International Aeronautical Exposition in Paris this plane deservedly occupied a prominent place among the foremost exhibits.

In designing new airplanes the Soviet aircraft industry strives to improve their fundamental qualities—speed, ceiling, range, economy and carrying capacity.

The Soviet aircraft industry has scored considerable successes in motor construction as well. Various types of motors have been created, with a capacity ranging from 100 to 1,250 h.p.

The Soviet aircraft industry has also mastered the production of special aviation instruments, such as gyroscopic compasses, radio goniometers, automatic pilots, etc.

The speed of the airplanes which the Soviet aircraft industry turns out for operation on the airlines of the U.S.S.R. is constantly increasing. The new models include the ten-passenger plane PS-35, the twelve-passenger plane PS-89, the twenty-passenger plane PS-84, the high-speed mail plane PS-40 and others. The PS-35, PS-40 and PS-84 models have retractable landing gears. The landing gear of the PS-89 is incased

in fairings. All these ships have an average speed of 185 miles an hour. These new ships are well equipped so as to provide the passengers a maximum of comfort.

The Soviet aircraft industry has created the conditions favouring the development of sports aeronautics. It has produced for this purpose a number of models of light airplanes designed by the young Soviet engineers, Yakovlev, Gribovsky and others. A number of models have been designed specially for the civil aviation service in the sphere of agriculture, polar flying, public health, etc.

In addition to the construction of airplanes, a base has been created for the construction of dirigibles and for the development of communication by means of dirigibles.

9. The high level of the Soviet aircraft industry, combined with the expert skill of the Soviet flyers, has brought Soviet aeronautics a number of important victories. In 1937 Soviet flyers broke the world record for distance. Soviet flyers have been successful in setting altitude records, and the Soviet aircraft industry is now working to increase the speeds of its airplanes.

The combination of the decisive aviation indices—range, altitude and speed—will ensure the further development of Soviet aeronautics as one of the important factors of the economic and cultural progress of the Land of Soviets.

GROWTH OF RAILWAYS

BY

V. OBRAZTSOV

1. Importance of Rly. system. 2. Freight traffic.
3. Electrification. 4. Condenser locomotive. 5. Rate of development.
6. 9,000 miles of new railway lines.
7. Training. 8. Rise in wages.

The vast territory of the Soviet Union stretches from the Black Sea to beyond the Polar circle, from the Gulf of Finland to the Sea of Japan. The wealth of the country multiplies with every passing year. New towns, industrial centres, mines and factories spring up in various parts of the Soviet Union. Deposits of gold and other rare metals are discovered in its mountain regions.

1. The importance of the railway system for the U.S.S.R. can be compared with the importance of the mercantile marine for Great Britain. The part played by Soviet railway in the general life of the country is steadily increasing. The rapid growth of industry and agriculture, the development of new regions and the strengthening of the country's defence powers require a highly efficient railway service and the Soviet Government is devoting much attention to developing and securing the smooth running of the nation's railways. In recent years the railway system has advanced to one of the foremost places in Soviet economic life.

The Soviet Government received a meagre heritage from the Tsarist regime. War and intervention led to the destruction of some 4,500 railway bridges with a total length of over 60 miles. The Murman railway, the Amur railway and other lines, construction of which was begun during the World War, were never brought to completion by the Tsarist Government. Practically no repair work was done for seven or eight years, railway ties were not changed and the road bed was not renovated. Thousands of miles of lines, numerous water-towers and station buildings were reduced to ruins. Dilapidated cars and battered locomotives filled the sidings of railway junctions. Traffic declined heavily. Average daily car-loading fell from 27,400 in 1913 to 6,200 in 1918, which was only 22.8 per cent of the 1913 figure. During the same period the volume of traffic declined from 40,009,000,000 ton-miles to 8,700,000,000 ton-miles.

It should be added that of the 43,798 miles of railways in Tsarist Russia in 1913, over 7,000 miles were ceded to Poland, Lithuania and other border states. The U.S.S.R. was left with 36,300 miles of line.

The Soviet Government left no stone unturned in its efforts to revive the railway system without resorting to foreign loans.

The revolutionary enthusiasm of the masses, the splendid response of the railway workers to the appeal of the Soviet Government, their labour enthusiasm and improved working conditions made it possible to surpass the pre-war volume of traffic by 1926-27.

2. Car-loadings increased steadily. In 1913 average daily car-loadings amounted to 27,400 cars, in 1918 this figure dropped to 6,200 but rose to 23,800 in 1937. Freight

traffic increased at an even greater rate. In 1913 the volume of freight traffic amounted to 40,900,000,000 ton-miles, in 1918 it dropped to 8,700,000,000 ton-miles but reached 51,200,000,000 ton-miles in 1927 and has continued to advance at an even higher rate in the subsequent years.

The Soviet railways experienced a particularly rapid growth in the period between 1928 and 1937. In 1928 the Soviet Government adopted its First Five-Year Plan for the economic development of the country which laid down a definite programme of expansion for each year. This plan was fulfilled ahead of schedule. The Second Five-Year Plan (1933-37) was likewise fulfilled successfully. In 1938 the Soviet Union began the fulfilment of its Third Five-Year Plan which was to be completed in 1942. The Five-Year Plans stipulate definite programmes for each branch of industry and agriculture. Every factory, mill, railway and depot is given a specific programme for the five-year period. The nation judges the quality of work of industrial establishments and their general efficiency by the fulfilment of their production plans. In this way the work of every enterprise is under the constant control of the people and the fulfilment of production schedules becomes a matter of honour for the workers of every factory.

The planned development of railways has led to a marked improvement in the operation of the railways. By the end of the First Five-Year Plan period average daily carloadings grew to 51,400 and to 89,800 by 1937. By the beginning of the Third Five-Year Plan period carloadings on Soviet railroads were over three times as high as before the war.

The volume of freight shipped increased by leaps and bounds—from 156,200,000 tons in 1928 to 267,900,000 tons at the end of the First Five-Year Plan

period and 517,300,000 tons in the last year of the Second Five-Year Plan period. Soviet railways transported almost four times as many passengers in 1937 as in 1928.

Coal, oil, ore, and metal account for 42 per cent of the aggregate volume of freight traffic. Taking the figures for 1928 as 100, shipments of coal and coke amounted to 383 per cent in 1937, ore to 435 per cent, metal to 460 per cent and timber to 270 per cent. These figures testify to the tremendous development of industry in the Soviet Union.

The freight density of Soviet railways exceeds that of any other country, as may be seen from the following table :

Traffic per mile of line in operation (in ton-miles)

	1913	1929	1936	1937
U.S.S.R.	689,000	909,000	2,416,000	2,589,000
Germany	788,000	944,000	722,000	—
Great Britain	—	589,000	514,000	—

Such is the progress made by the Soviet railways in the last ten years.

It must be pointed out that radical reconstruction of the railway system began actually in 1935 with the appointment of L. Kakanovich to the post of People's Commissar of Railways. Since then the rolling stock of Soviet railways has been replenished by the introduction of two new types of powerful locomotives—the "FD" (named in honour of Felix Dzerzhinsky) for freight traffic and the "JS" (Joseph Stalin) for passenger traffic. These locomotives exceed the old "EM" "SU" type locomotives by 50 per cent in traction power. The "FD" and "JS" locomotives are the first in the U.S.S.R. to be equipped with mechanical stokers.

The introduction of Diesel-electric locomotives, which were unknown in pre-revolutionary Russia, marks a great step forward in Soviet railway engineering. Diesel-electric locomotives of the "E-EL" and "VM-20" (V. Molotov) type have proved very efficient and are being used extensively on the Central Asiatic railways which pass over arid country.

3. Great progress can also be recorded in the electrification of the railways. This work was facilitated by the fulfilment of the national electrification plan adopted by the Soviet Government on Lenin's initiative.

There were no electric railways in Russia prior to the Revolution. The first electric line was built in 1926; it was suburban line between Baku and Sabunchi. At present the U.S.S.R. has 1,116 miles of electrified railway, of which 198 miles are suburban lines and the remainder trunk lines.

The introduction of electric traction necessitated the construction of high-power electric locomotives. This problem was solved by Soviet industry, which has provided the railways with the "VL" (V. Lenin) electric locomotive for passenger and freight traffic, the "SS" locomotive for freight and the "PB" for passenger traffic. All these locomotives use 3,000 volt direct current. The "PB" locomotive can develop a running speed of 87 miles. The "VL" 53 miles and the "SS" 43 miles per hour.

4. The latest innovation in Soviet railway technique is the new "SO" (Sergo Orjonikidze) condenser locomotive. The condensing installation of this locomotive converts the steam discharged by the cylinders into water to be used again for steam. The original water supply can pass through the condensation process from 10 to 13 times, providing a steady flow of pure distilled water for the boilers. The "SO"

locomotive can run from 620 to over 1,000 miles without taking water. The importance of this locomotive is especially great in arid districts and where water is of poor quality. Another feature of the condenser locomotives is that it reduces fuel expenditure by 15 to 20 per cent.

The number of condenser locomotives in use on Soviet railroads is steadily increasing. In 1938 alone Soviet plants built 406 "SO" condenser locomotives as compared with 399 built during the entire First Five-Year Plan period. Other types of locomotives are also being fitted with steam condensation installations. The Voroshilovgrad Locomotive Works has produced a new type of "FD" condenser locomotive, the largest of its kind in the world.

The Kolomna Locomotive Works has produced a new type of locomotive, the 2—3—2, with a running speed of 93 miles per hour; a similar locomotive has been built by the Voroshilovgrad Works with an even higher running speed (112 miles per hour). The Kolomna locomotives are used on the Red Arrow Moscow-Leningrad Express.

The Kolomna Locomotive Works has also produced and is now testing a new type of high-pressure locomotive equipped with a uniflow boiler. Another type of high-pressure locomotive was being designed at the Voroshilovgrad Works and was to be experimental steam-electric locomotive, designed by Engineer Meizel. Its efficiency was expected to be more than double that of the ordinary steam locomotive.

5. *Both in industry and in railway transport the U.S.S.R. has surpassed all other countries in rate of development. This is brought out, for example, by the increase in the number of locomotives on the lines. During the five years from 1927 to 1932 the Soviet Union produced 3,412 locomotives as against 458 locomotives*

built in 1927. During the Second Five-Year Plan period (1933-37) the U.S.S.R. built 5,957 locomotives, of which 1,215 were built in 1937 alone.

The wagons in use on Soviet railways have been completely reconstructed. They have been fitted with automatic brakes and one-fourth of all wagons in use have been equipped with automatic coupling. The standard 16-ton railway wagon is now being replaced by powerful four-axle box wagons, gondola cars, hopper cars, tank cars, and flat cars of from 50 to 70 tons capacity.

Soviet factories were in 1938 preparing for mass production of a new type of all metal passenger coach which would afford every modern convenience.

The following figures show the renovation of wagons in use on Soviet railways. From 1927 to 1932 the Soviet railways were supplied with 66,361 new goods wagons and 4,092 new passenger coaches. From 1933 to 1937 Soviet industry produced 170,375 goods wagons and 5,315 passenger coaches. In 1935 alone about 70,000 new vehicles put into service.

The construction of 216 repair shops, most of them good sized plants, was completed in record time. In addition to these, 64 depots, 17 wheel repair shops, automatic brake inspection and repair shops have been built and many shops have been reconstructed.

At the same time there has been a marked improvement in station facilities. By 1937 over 22,000 mechanized and electrified inter-locking switches had been installed on the railways. Construction has been completed of 22 ordinary humps and 33 mechanized humps fitted with automatic retarders. Automatic block signals have been installed on 3,202 miles of line.

New lines are being built at a more rapid pace. Every year thousands of miles of new railroad lines are put into operation. During the last five years approximately 3,000 miles of second tracks were laid and about 3,700 miles of existing line were reconstructed. During the same period over 62,000 miles of line were overhauled and repaired.

Soviet railways have been provided with 54 track-laying and repair stations equipped with the latest machinery. This makes it possible to perform repairs much more quickly with the use of ballasting machines, track graders, pneumatic sleeper-packing machines, motor rail-jacks, etc.

6. Railways are never closed down in the U.S.S.R. for lack of traffic, and the total length of line is steadily increasing. Between 1918 and 1936 the Soviet Union built over 9,000 miles of new line, while many additional lines have been completed. The rapid growth of Soviet railroads is graphically demonstrated by the following table :

Aggregate mileage of Soviet railways

1913	..	36,300
1929	..	47,700
1932	..	50,733
1936	..	52,700

The development of the Soviet railway system was possible because the Soviet Government devoted much attention to training highly skilled engineers and workers for all branches of the system.

7. The number of institutes training railway engineers has increased sixfold since the revolution, the number of railway colleges has doubled and the number of technical and apprenticeship schools has increased almost elevenfold.

During the years of the Second Five-Year Plan period Soviet institutes trained over 15,000 railway engineers and 34,000 technicians. The institutes of railway engineering now have a student body of over 21,000 and employ some 2,000 professors and teachers. Many thousand people attend railway colleges and apprenticeship schools.

An extensive network of study courses and classes has been established to provide technical training to railway workers after working hours. In 1938 these courses were completed by one million railroad workers. Technical training centres, offering courses in popular technology and hundreds of technical libraries and laboratories are doing work of first-rate importance in raising the skill and knowledge of the huge army of railway workers.

This work is already bearing fruit. The Stakhanov and Krivonoss movement, a movement of people who have mastered their job to perfection, has spread far and wide throughout the entire railway system of the country. Locomotive drivers like Krivonoss, Ognev, Tritskaya, and Mokarov have found the ways and means of raising the efficiency of locomotives. They have increased running speeds and the weight of trains, and are running their locomotives longer distances without repairs. Shunting foremen Krassnov, Kozhukhar, and others have devised methods of making up trains in a shorter space of time and improved the methods of marshalling wagons. The methods introduced by these and others foremost workers have more than doubled labour productivity.

The example set by Krivonoss and his followers served as a stimulus to all railway workers. The Krivonoss movement, a movement for technical progress and higher efficiency has grown to be a mass movement. At present there are

approximately 600,000 Stakhanovites on the Soviet railways. One thousand five hundred railway workers have been decorated by the Soviet Government and 600 have been awarded the railway workers Merit Badge.

The initiators of this movement have been promoted to important executive posts in State and economic organizations. Makarov, erstwhile locomotive driver, is now Assistant Chief of the Central Locomotives Administration of the People's Commissariat of Railways. Another ex-locomotive driver, Ognev, is now General Manager of the Dzershinsky Railroad; Trotskaya, also a former locomotive driver has been appointed General Manager of the Moscow Circuit Railway, Zakorko, a former dispatcher, is now General Manager of the Stalin Railway and Kutafyev, also a former dispatcher, is General Manager of the Southern Railway.

8. Increased labour productivity is attended by a rapid rise in wages. Locomotive drivers employed in passenger traffic earn upwards of 1,000 roubles a month; drivers employed in freight traffic average 850 roubles a month. The average wages of railway workers in 1937 amounted to 284 roubles, which represents a 100 per cent increase against 1932.

The U.S.S.R. was witnessing still greater economic development under the Third Five-Year Plan. The fulfilment of this great plan necessitated the further development and improvement of the railway services.

The Third Five-Year Plan provided for the construction of 6,820 miles of new line, the laying of 4,960 miles of second track and the electrification of 1,141 miles of line.

The most important of the new lines to be constructed under the Third Five-Year were the Akmolinsk-Kartaly line.

(part of the Stalinsk-Magnitogorsk trunk line), and the Kislyar-Astrakhan line. The completion of these lines would reduce railway distances by hundreds of miles. New railways were being built in Georgia, Armenia, Azerbaijan, the Urals, Siberia, the Ukraine, and in the central regions of the U.S.S.R.

Under the Third Five-Year Plan 37,300,000,000 rubles were to be expended on capital construction on the railways, as against 20,700,000,000 rubles under the Second Five-Year Plan.

The plan also provided for an increase in the number of locomotives by 8,000, particularly condenser locomotives, which in the next few years would become the leading type of locomotives in use on Soviet railways for freight traffic.

The railway system were to receive 225,000 four-axle goods wagons and 15,000 passenger coaches; 300,000 goods wagons and 4,000 passenger coaches were to be equipped with automatic coupling.

There was to be an increase of freight traffic from 220,000,000,000 ton-miles in 1937 to 316,700,000,000 ton-miles in 1942.

INLAND WATERWAYS AND TRANSPORT

BY

A. BLIDMAN

1. 248,400 miles of waterways.
2. Investment of capital.
3. Tanker fleet.
4. Machinery.
5. Press interest.
6. Women's role.

1. Two oceans and twelve seas wash the shores of the Soviet Union. Its sea coast stretches for 26,703 miles. The vast expanse of the country is intersected by 500,000 rivers; its inland water surface includes two seas and 180,000 lakes. No country in the world can compare with the U.S.S.R. in the number and might of its navigable inland waterways which aggregate 248,400 miles.

In Tsarist Russia the length of the navigable waterways open for traffic (excluding rivers serviceable for floating timber) was 27,945 miles. But only 22,356 miles were equipped with flash signalling installations for the guidance of mariners (buoys, beacons and so forth) which were of a primitive quality hardly comparable to the installations now in use. Under the Soviet Government the length of the navigable waterways (excluding those serviceable for floating timber) has increased by 37,881 miles and now comprises 65,826 miles.

The rivers of the Soviet Union are important not only as a means of traffic, but they are at the same time a mighty source of electric power supply. As early as 1919, when the

(Civil War was raging all over the country, work was begun on the first Soviet hydro-electric power plant on the Volkhov River, not far from Leningrad. During the First Five-Year Plan period a gigantic dam was built across the Dnieper River, in the Ukraine, which raised the level of the river by 123 feet. Prior to this the Dnieper rapids barred navigation over a considerable stretch of the river, but with the completion of the dam the rapids disappeared and the river became navigable from its upper reaches to the Black Sea. A triple chamber lock allows for the passage of craft. The Dnieper Hydro-Electric Power Plant with a capacity of 558,000 kilowatts generates more electric power than did all the electric power plants in Tsarist Russia.

Dams have been built on the Svir, near Leningrad, where a powerful hydro-electric power plant is now operating. Another hydro-electric power plant was to be built here during the Third Five-Year Plan period (1938-42).

In Karelia, cutting through granite hills and virgin forest, a canal, 141 miles in length, was built in twenty months. This canal links the White Sea with the Baltic Sea.

Another feat of engineering, but far more complicated, was the building of the Moscow-Volga Canal. Two hundred large works had to be built along its route of 79.5 miles. These works include eleven locks, eight earth filled dams, seven spillways, six floodgates, five pumping stations, eight hydro-electric power stations, seven railway bridges and twelve bridges for other traffic. The whole scheme was completed in four years.

In the building of the canal 170 excavators were employed hundreds of locomotives, motor-shunters, concrete mixers, hydro-monitors, thousands of conveyors and electric engines. Volga River water now washes the walls of the

Kremlin in Moscow. Formerly the Moscow River was very shallow and hardly suitable for river craft. Now it has been linked up with the great Volga thoroughfare. The water course from the capital to Leningrad has been reduced by 685 miles and the distance to Gorky by 68 miles. The largest vessels can now sail the canal which can handle annually some 15,000,000 tons of cargo in any given direction.

2. The amount of capital invested in water transport is increasing with every year. Under the First Five-Year Plan 1,253,000,000 roubles were assigned to this branch of the national economy. The sum appropriated under the Second Five-Year plan was 2,852,000,000 roubles. These sums were expended on building a modern technically well-equipped fleet of river and ocean-going vessels, on refitting existing vessels, on the construction of new ports and reconstructing existing ports. New shipbuilding yards and dockyards were built in various parts of the country, while new equipment was installed in the existing yards, thus placing them on an equal footing with the up-to-date enterprises.

The Soviet salvage organization, Epron, has been doing excellent work these last fifteen years in raising shipwrecked or sunk vessels from the beds of seas, rivers and lakes. Many a vessel that was sent to the bottom by the foreign invaders during the Civil War has been given a new lease of life due to the efficient work of Epron and is now ploughing the rivers and seas under the flag of its Socialist country.

The fleet of the Soviet merchant marine is rapidly increasing in size thanks to the new vessels that have been built for it by the home yards. Many vessels were also ordered to be built or purchased abroad. The tonnage of the Soviet merchant marine has increased nearly three and a half times between 1923 and 1937. These vessels differ radically from

the type of vessel averaged 1,150 tons. At present the average deadweight is around 3,000 tons.

3. *The Soviet Government has created a large and modern tanker fleet in the Caspian and Black Seas. The fleet of Soviet icebreakers is the largest and most powerful in the world. In the winter months these vessels ensure a free passageway for ships entering and leaving all icebound ports and also maintain a regular service between Murmansk and Vladivostok along the Great Northern Sea Route.*

The Soviet river flotilla is practically new. During the two Five-Year Plan periods, i.e. 1928-37, the carrying capacity of the fleet of river steamers and motor ships has almost doubled, while that of barges has trebled.

Many new vessels have been added to the river transport service. These include steamers and motor ships ranging from 150 to 1,200 h.p., cargo-passenger boats from 200 to 300 h.p., steamers having a deadweight of from 1,750 to 3,000 tons, refrigerator and numerous motor boats. Many new barges have been built for carrying oil in bulk and dry goods with a carrying capacity of from 1,000 to 4,000 tons. The Moscow-Volga Canal maintains its own fleet of comfortable passenger motor ships of from 280 to 700 h.p. The fleet of shallow draft motor boats for the lesser rivers is constantly growing.

This has considerably enhanced river and sea shipments. In comparison with the pre-war period the cargo carried by the Soviet water transport system during the Second Five-Year plan period has increased 300 per cent. The freight turnover of the Soviet water transport system aggregated 43,000,000,000 ton-miles in 1937.

In 1924 the freight turnover of sea-going vessels aggregated 3,900,000 tons. In 1937 it already exceeded 29,000,000 tons. During the last ten years shipments of timber have increased eleven times. In 1938 some 19,000,000 tons of oil were shipped by Soviet tankers.

The Soviet merchant marine has considerably increased its relative standing in the import and export trade. In 1929 Soviet vessels carried 10.3 per cent. of the country's foreign trade. By 1936 this had already grown to 35.9 per cent.

The Soviet flag can now be met in every port of the world and along all the main ocean and sea routes. Regular sailings are maintained between the U.S.S.R. and the U.S.A.

The importance of water transport service as a means of conveying passengers is borne out by the fact that in 1938 the fleet of Soviet river steamers alone carried some 67,000,000 passengers.

During the last few years almost all the previously existing seaports and river wharves have been thoroughly reconstructed and brought up to date. Ports like Leningrad, Odessa, Novorossisk, Murmansk, Nikolayev, Poti, Hariupol, Baku, Makhach-Kala, Vladivostok and Archangel have been fitted out with new moorings, portal cranes and other modern port facilities, not to mention elevators and cold storage plants. New ports have come into being such as : Onega, Soroka, Kandalaksha, Igarka, Narayan-Mar, Nogayevo, Kara-Bogaz-Gol, Port Illyich and Otchemtchiry.

Antiquated river wharves and mooring have been rebuilt and fitted out with new and up-to-date equipment. Such river ports as Gorky, Stalingrad, Kiev, Dniepropetrovsk, Astrakhan, Rostov-on-Don, Perm, Novosibirsk, Archangel, Moscow and Zaporozhye have changed beyond all recognition.

Of the new river ports, Lenin Harbour on the Dnieper River, in the vicinity of the hydro-electric power station, deserves particular mention.

4. The new machinery installed in the ports and harbours has given rise to new vocations ; crane operators, conveyor belt operators, engine men, electricians, chauffeurs, mechanical engineers now supplant the longshoremen of former days. Engineers, technicians and executive personnel for the river and sea transport service are being trained by the Academy of the Water Transport System, three engineering colleges, 29 technical training schools and 20 workers' colleges. The number of people enrolled in these schools and colleges totals 32,000. Apart from these educational establishments 60 schools are giving special vocational training to juveniles. A large network of central and local courses for Stakhanovites are training or raising the qualifications of machine operators, foremen, stevedores, dispatchers and wharf superintendents.

With machinery as an auxiliary, the water transport workers are improving this machinery, making it work better, quicker, in a word, squeezing out of it all that is possible.

During the 1936 navigation season I was working in the coal harbour of the Kiev port. The loading was done by means of a "Yanvarets" conveyor belt. The loading capacity for this type of conveyor was fixed at 32 tons per hour. But owing to various slight defects it was never possible to load more than 28 tons. I made a careful study of the conveyor belt. A simple innovation, proposed by me, had an immediate effect. The brigade to which I belonged began to fulfill the scheduled rate 100 per cent. Further improvements which I introduced enabled us to increase the coal loadings to 40 tons per hour. Naturally, our earning

increased accordingly. We began to make 6.35 roubles an hour.

Continuing the work I had begun of improving the conveyor belt, I succeeded in bringing our loading up to 50 tons of coal an hour. The conveyor belt hardly managed to cope with the amount of coal the men were shovelling into the loading funnel. What I then did was to increase the speed of the conveyor belt from 2.95 feet per second to 3.9 feet, change the sheaves and lengthen the funnel. The result was that our loadings again began to grow—as much as 70-80 tons per hour.

I was bent, however, on improving this. I proposed to drive for 100 tons an hour. Doubting Thomases did not believe that this was possible. But I was convinced that it was. All that had to be done was to speed up the conveyor belt, instal a more powerful motor and enlarge the loading funnel so that it would be possible to shovel coal into it from three sides instead of one.

The day after this innovation was introduced the loadings jumped up to 120 tons per hour, and in the presence of a special commission sent to test my innovation the result shown was 147 tons. Small craft which usually took 40-50 tons of coal were now loaded within half an hour.

I then began to test my innovation with sand loadings. Success was assured from the very outset. Loading jumped up to 290 tons per hour.

Our earnings also showed a considerable increase. Although we were making record loadings we were not in the least tired and would go home from work happy and jolly.

5. The press began to take an interest in our work. At the first items began to appear in the paper published by

the port authorities. Then articles began to be published in the Kiev papers and finally in the newspapers of the capital. In the Soviet Union invention like mine, or for that matter any scheme for rationalizing industry, serving to make it more productive, are not the private trade secret of any individual or enterprise. They are immediately made public and introduced all over the country. The Stakhanovites of the Dniepropetrovsk port asked us to give them the details about our innovations. A brigade of Kieve stevedores immediately left for Dniepropetrovsk to demonstrate our methods to the local stevedores. After this the Kieve stevedores challenged the Dniepropetrovsk men to a Socialist competition.

We were bent on showing record results. We fixed up two additional conveyors of the "Samarets" type and linked them up with the main line. This enabled us to feed the main conveyor right from the coal dumps. The loadings jumped to the record figure of 214 tons per hour.

At a rally of inventors which was held in Moscow in the winter of 1936 I undertook to increase the productivity of my conveyor to 300 tons per hour. The actual results, however, during the 1937 navigation season were far beyond my fondest hopes. Our loadings rose to 382 tons per hour.

In the autumn of 1937, together with a group of Kiev stevedores, I was sent to study at the Leningrad Water Transport Academy. The daytime I devoted to study, but at night I worked out the details of a plan for bringing loadings up to 500 tons per hour.

In the spring of 1938 I was in Dniepropetrovsk. Last year's record established by my brigade had already been topped by another brigade—their loadings being 392 tons. I decided to give a hand to the brigade that was lagging most behind. In a short while this brigade, which had always

shown the poorest results, was loading 435 tons, beating the records set by the best brigades. A few days later my plan of 500 tons per hour became a reality—in one hour my brigade loaded 504 tons of coal.

The very next day another brigade also topped the 500 mark, loading 500 tons of salt. But soon this high level was left behind. My brigade began loading 630 tons per hour. In other words we were fulfilling 20 normal loading quotas. The conveyor was moving at the rate of 11.4 feet per second. Other brigades were also showing good results.

By the end of 1938 even this high level had been surpassed. Our loadings were now 1,059 tons of coal an hour.

Every port, every wharf has its own Stakhanovites, its own inventors, its own rationalizers. The names of Petrash and Henkin, Stakhanovite stevedore men from the port of Odessa, are familiar all over the Soviet Union. At the present moment Petrash has been promoted to superintendent of one of the largest ports in the country—the port of Baku. Henkin, who is a foreman stevedore, was elected a member of the Supreme Soviet of the U.S.S.R.

Captain Tchadayev, master of the Stephen Razin, was the first to begin towing larger caravans of barges. His vessel began towing barges loaded with 40,000 tons of oil. Captain Kalmykov increased the number of barges attached to this tug boat to 22 units. In every basin of the Soviet Union people began to emulate the example set by Captains Tchadayev and Kalmykov. They are raising the productivity of labour to unprecedented heights, showing real feats of labour heroism. Many of them have been awarded the highest distinctions in the Soviet Union for their outstanding work.

6. Women too hold an honourable place in the water transport system. Ann Schetina, captain of an ocean going

vessel, Olga Dobychina, pilot, are but two in a whole list of names known all over the country.

The progress made by the water transport system is accompanied by an improvement in the well-being of the water transport workers. This applies not only to wages but also to the cultural level of the transport workers. The following figures give an idea of how average wages have increased.

Average Annual Wages of Water Transport Workers
(in roubles)

		1932	1937
River-going vessels :	crew	1,332	3,461
	Logshoremen	1,825	3,763
Sea-going vessels :	crew	2,341	5,678
	Logshoremen	1,739	3,934

Two-thirds of all the workers in the ship-building and repairing yards are on a seven-hour shift. The rest are on an eight-hour shift, with the exception of stokers, boilermen and all categories of hazardous trades, who are on a six-hour shift.

Clubs, libraries, theatres, moving picture theatres, stadiums, sports grounds and yacht clubs are at the disposal of the transport workers and their families. The Water Transport Workers' Union has splendid rest homes and sanatoria in some of the most beautiful spots in the Crimea and the Caucasus. These annually accommodate some 50,000 people.

Before the Revolution the water transport system could boast of only 12 second-rate hospitals. By the middle of 1937, 127 hospitals, 270 clinics and dispensaries, 268 first aid stations (located directly in the yards, wharves, etc.), 247

feldsher stations, 42 health centres for children were at the service of the water transport workers. While the adults are busy at work loading, manning, building or repairing vessels their children are looked after in 400 kindergartens. The best of everything is ensured to the children, who are under the constant observation of trained nurses and doctors and experienced pedagogues. In the spacious rooms and playgrounds of these kindergartens the children find interesting pastimes in collective games, music, singing and drawing. In the summer time the kindergartens leave for the countryside.

Under the Third Five-Year Plan (1938-42) the water transport system was to play a still more important role in the economic life of the Soviet Union. The fleet of river and sea vessels was being considerably improved from the technical standpoint and was being supplemented by new and still better vessels. The plan provided for the construction of new ship-building yards. The freight turnover of river transport was planned at 36,000,000,000 ton-miles for 1942 and that of sea transport at 32,000,000,000 ton-miles.

New water arteries will increase the length of the inland waterways from 63,342 miles (the total length at the beginning of 1938) to 76,015 miles.

Of the Volga projects the Uglich development and Rybinsk development have begun to function and the year 1942 would see the completion of the Rybinsk and Uglich reservoirs. This would increase the depth of the river between Rybinsk and Ivankovo from 4 feet to 16.5 feet. At Kuibyshev work is under way on the largest hydraulic engineering scheme in the world—two hydro-electric power plants of an aggregate capacity of 3,400,000 kilowatts. The dams here would raise the level of the river for a stretch of 1,242 miles and this

would allow the passage of ocean-going vessels, provide cheap power to factories and works along the Volga, the South Urals and Moscow, besides irrigating 7,410,000 acres of arid land.

The general plan for the reconstruction of the water arteries of the U.S.S.R. provides for the construction of eight hydraulic engineering development schemes on the Volga River alone. A canal at Stalingrad will link up the Volga and the Don rivers. This will give the Volga an outlet to the open sea, connecting it with the Sea of Azov and the Black Sea.

The Soviet merchant marine, furnished with new, first-class vessels, will ensure still cheaper and quicker shipment of raw materials for the needs of industry, agricultural produce, manufactured goods and consumers' goods produced by Soviet works and mills, along the waterways of the U.S.S.R.

THE MOSCOW—VOLGA CANAL

BY

A. KOMAROVSKY

1. 200 years' History. 2. Earth dams. 3. Built in 56 months. 4. Books natural. 5. Architectural work. 6. Water for Moscow.

On the bank of what once was a small stream called Khimki, just a few miles outside Moscow, towers a magnificent structure built of granite and marble. From a distance it looks like a giant double-decker ocean liner with a structure reminiscent of a captain's bridge in the middle. A five-pointed gold star glistens at the top of its tall spire of stainless steel, rising 262 feet above the ground. The main entrance to the building is decorated with porcelain discs bearing sculptured representations of the Kremlin, the Palace of Soviets, the Lenin Mausoleum, the Theatre of the Red Army and the Dnieper Hydro-electric Station. The porcelain discs on the land side depict a number of famous ships, such as the ice-breaker Krassin, the Soviet cruiser Aurora, Columbus' Caravel, etc.

A broad granite staircase leads down to a concrete pier. The waves of the newly-created wide Khimki Lake lap the stone moorings.

This building is known as Moscow's Northern River Port. Its facade ought to bear the inscription :

*"Moscow's Port of three Seas :
The White, Baltic and Caspian"*

1. The history of the canal which links the Moscow River with the Upper Volga dates back two hundred years.

In the 1720's Emperor Peter I commissioned engineer William Henning to design the plans for a canal between the Volga and the Moscow River. The plan called for the building of 100 locks with a water-level of not more than 6.5 feet each. The canal was to be navigable for vessels with a deadweight of about 50 tons. A trip along the projected canal was to take at least three days.

Fairly detailed plans were drawn up. But the task of cutting that kind of canal seemed too complicated and un-realisable in those times. The project was pigeon-holed and the question of the canal was not broached again for another hundred years.

The idea of building a Moscow-Volga canal was resuscitated in the 19th century during the reign of Nicholas I in connection with the decision to erect the Cathedral of Christ the Saviour in Moscow. At that time the building of a cathedral of the size planned seemed to be a colossal undertaking, and the transportation of the necessary building material presented a practically insuperable problem. After interminable meetings of committees and sub-committees it was decided to dig a canal between Moscow and the Volga for the sole purpose of transporting limestone and granite from the upper reaches of the Volga to the construction site of the cathedral.

A project was drawn up for a canal between the Sasra River, a tributary of the Dubna which flows into the Volga, and the Istra River, a tributary of the Moscow River.

Work on this canal went on for 19 years. In the meantime the building of a railway between Moscow and St. Peters-

burg (now Leningrad) was begun, and economists pointed out that the clients who were expected to use the artificial waterway would prefer to send their shipments by the new railway. The work on the canal was accordingly discontinued and all its structure, finished and unfinished, were sold at public auctions. The idea of the canal was again consigned to oblivion for another century.

It was only in recent years, in the Socialist state of workers and peasants, that the idea of linking the Volga with the Moscow River was realised on the initiative of Joseph Stalin.

The realisation of this idea faced the engineers with a difficult problem. The Volga whose waters had to be made to flow into the Moscow River was separated from the latter by 80 miles of fields, marshes and hills. The task was to create a navigable waterway across the high divide between the two rivers.

The Soviet engineers in charge of the project displayed great ingenuity in solving this problem.

2. They built a number of large earth dams and created a chain of artificial lakes joined with each other by means of canals and a system of locks rising in the form of "water stairways" from each side of the new waterway—from the Volga and from the Moscow River.

In order to provide an uninterrupted supply of water for the new waterway, a large storage lake, known as the "Sea of Moscow," was created at the Volga terminus of the canal. This lake holds 39,547,200,000 cubic feet of water and regularly discharges 3,530 cubic feet of water per second which is conveyed by the canal to Moscow. Two hundred major engineering structures have been erected along the route of the canal, including 11 reinforced concrete and 11 earth

dams, 7 railroad and 12 highway bridges, 5 pumping stations, 8 hydro-electric stations with an annual output of 150,000,000 k.w.h., and the Stalin waterworks.

In order to make the waters of the Volga flow into the Moscow River, it was necessary to excavate approximately 262,000,000 cu. yards of earth and pour about 7,000,000 tons of concrete. The building of the canal required 850,000 tons of cement, 9,156,000 cu. yards of stone and gravel and 110,000,000 bricks.

3. The tremendous job was performed in record time. The entire construction took 4 years and 8 months. This could be accomplished only by having the work mechanized. The numerous machines which were used in the construction of the canal were all produced in Soviet factories.

The special railroads, which served the construction site, were provided with 160 locomotives, 225 motor railcars and 2,100 flat cars.

The builders of the canal further, had at their disposal 275 tractors and 3,050 trucks, 190 hydraulic giants and 170 steam shovels working in the excavations and quarries.

Telephone and telegraph wires of a total length of 2,740 miles stretched like a dense cobweb overhead along the entire route of the futur canal. The construction was provided with 3,200 telephones and 22 telegraph stations.

The Moscow-Volga Canal was finished in the summer of 1937, on the day fixed for its completion.

On May 2, 1937, a flotilla of large motorships and cutters, the first to pass through the Canal, cast anchor opposite the walls of the ancient Kremlin.

In the navigation season, ships running exactly on schedule leave the pier at Moscow's Northern Port on Lake Khimki and proceed northward. The ships follow the canal, rising to the watershed and then descending again.

Small rivers flowed here but a few years ago. Now these rivers no longer exist. Huge earth dams were built across the channels of the streams. The latter flooded their natural valleys and formed artificial lakes covering a total area of over 23 square miles. Sections of the canal connect the separate storage lakes, and the vessel pursuing its course over the new waterway passes through the connecting canals, with their geometrically precise stone banks, from lake to lake each abounding in small green islets and bays.

The Moscow-Volga Canal is 79.5 miles long. It is 183 feet deep, which is an unusual depth for river canals. Its width—280.4 feet—is sufficient to allow the simultaneous two-way passage of the largest river vessels. Big three-decker passenger ships and heavy metal barges with a deadweight of 18,000 tons can sail on the canal.

4. Looking at the green meadows, woods and pastures on the shores of the artificial lakes and observing the flocks of ducks rising noisily from under the very nose of the ship, or the grey gulls circling and screening overhead, one might think that these lakes, bays and creeks have been created by nature and have existed here since time immemorial. Only the stone banks of the canal and the arched bridges spanning it bear witness to the fact that this waterway is the handiwork of man.

One of the artificial lakes is the Ucha Reservoir. Its south-eastern section is protected on three sides by earth dams. The reservoir holds 7,944,750,000 cu. feet of water. Here the silt and mud settles and the clear water then flows south

through a special reinforced concrete channel about 17 miles long to the Stalin Water Works where it is further purified before it passes into the pipes of Moscow's water distribution system.

The last lake in the series of steps by which the canal rises to the crest of the watershed is bounded by an earth dam. Next to the dam rise the austere and magnificent white stone towers of Lock No. 6.

After passing through the gates of this lock the north-bound vessel begins its descent of 125 feet down the steps of the northern slopes of the canal leading to the "Sea of Moscow" on the Volga. The descent is down a flight of five steps, each of a height of from 19.6 to 26.2 feet. The length of each of these steps, while varying, is measured in terms of miles.

5. The architecture of the structures along the route of the canal is also worth noting. Until recently very little attention was paid to the architectural aspect of hydro-technical works. Hydraulic engineers maintained that a lock, for instance, was primarily an engineering structure and its appearance was entirely subordinated to technical requirements. In their opinion every attempt at architectural designing would only tend to obscure the clear and precise purposes of the various structures. They cited the examples of the Suez, Panama and Kiel Canals, where all the structures are devoid of any architectural embellishment.

The builders of the Moscow-Volga Canal were of different opinion. They held the view that each lock must have its own architecture, and that all the structures of the finished canal must be so architecturally designed as to serve as a fitting monument that would tell future generations of the

heroic work of the tens of thousands of workers engaged in its construction.

The Soviet architects attained splendid results in coping with the difficult problem. The lofty towers rising above Lock No. 6 are an example in point.

The lock itself is an immense ferro-concrete chamber 950 feet long and 98.4 feet wide. It lowers the vessel 26.2 feet down the first step of the northern descent. At each of the five steps of the descent the lock is rounded by an auxiliary canal with a pumping station in the centre.

The pumping station at Lock No. 6 is a magnificent tall building faced with natural stone of a light hue. Inside, it is equipped with four propeller pumps which have no equals anywhere in the world.

Each pump weighs 85 tons. The diameter of its turning wheel is 8.2 feet. The capacity of its motor is equal to that of the engine of a passenger locomotive. The pipe by which the water is brought to the pump is so wide that a heavy truck could pass through it easily. Each pump raises 5,400 gallons of water per second to a height of 26.2 feet.

As the ship proceeds northward it passes through other locks. Around each lock one sees flowers, young trees, signal lights. Only the lock towers in each case are of a different shape, of a different appearance and different colour.

At least, having descended all the steps of the northern slope, the ship enters the "Sea of Moscow". The contours of the shores are veiled in a misty haze. One catches the sound of a distant ship's siren. It is echoed by the sirens of other ships. From the Sea of Moscow vessels sail in different directions. Some proceed west to Kalinin. Others take

the course southward—to the Canal and then on to the Moscow River, Oka, Volga and Caspian Sea. Boats sail from here eastward to proceed along the old channel of the Volga to the Mariinsk system leading to Lake Onega and further west to Leningrad and the Baltic or north to the White Sea along the Stalin White Sea-Baltic Canal.

This last route—from the Sea of Moscow to the old channel of the Volga Canal be clearly seen from the ship. There is a broad canal leading east from the lake. In the distance rise the white stone towers of a lock which affords passage to the ships proceeding from the "Sea of Moscow" down to the Volga.

To the right may be seen the earth dam blocking the old channels of the Volga. Next to it is the concrete building of the Ivankovo hydro-electric stations with 30,000 kilowatt capacity. (A similar hydro-electric station stands at the beginning of the steps of the southern descent from the divide to the Moscow River.)

Immediately behind the Ivankovo hydro-electric station rises the wall of a concrete dam across the Volga, raising the level of the river 59 feet. A giant crane moves back and forth on top of the dam, raising and lowering the powerful metal shields which block the eastward course of the Volga.

An earth levee extending for 5.5 miles from the concrete dam bounds the "Sea of Moscow" in the east.

And rising above the dams, locks, the hydro-electric station, the expanses of the "Sea of Moscow" and the vessels plying its waters there stand at the entrance to the Canal two colossal monuments—the statues of Lenin and Stalin hewn in grey granite.

A few years ago the Volga flowed here. Each spring it rose in angry floods inundating the adjoining meadows. Each summer its level dropped, and shoals and sandbanks appeared on the surface. In the hot summer months even small vessels with a low draft could not sail in the upper reaches of the Volga.

This place has now been turned into the "Sea of Moscow"—a broad lake covering an area of 126 sq. miles. It is here that the pumping stations obtain the water for the new waterway. It is from here that water is conveyed to the water mains of the capital.

Vessels ply the waters of the wide lake, signalling each other with their sirens. The distant shores echo the signals. In the night the route across the lake is indicated by automatic signal lights.

The ship proceeds westward. There is not a single shoal or sandbank on the way. A broad expanse of water covers the former meadows and brushwood. The waves of the new lake swell over the site where some villages and the small town of Korchev stood only a few years ago—the villages and the town have been moved to new places.

After having traversed a distance of 74.4 miles from the Volga Dam, the ship is moored at the new snow-white landing-pier of the port of Kalinin.

This terminates the trip.

6. With the cutting of the canal, the waters of the Volga have begun to flow to Moscow. The capital is now fully provided with drinking water.

The waters of the Volga have replenished the Moscow River. As a result the water level of the old Moscow River at the Kremlin has risen almost ten feet.

The canal has shortened the distance between Moscow and a number of other cities of the Soviet Union. Thus the distance to Gorky has been reduced by 68 miles. The distance from Moscow to Leningrad by water has been shortened by 685 miles.

At the initiative of the great Stalin, the city of Moscow, which was formerly far removed from "big water", has thus been transformed into a port of three seas : The White Sea, the Baltic, and the Caspian Sea.

PART III

SOVIET AGRICULTURE

GREAT CONTRIBUTION OF SCIENCE TOWARDS AGRICULTURE

BY

N. TSITSIN

1. Hybrid seedings. 2. Outstanding scientist. 3. Perennial wheat. 4. Hot-house farming. 5. Emigration of crops to the North. 6. Summer potatoes. 7. Combating pests and diseases. 8. Fertilizers. 9. New implements. 10. Livestock. 11. Movement of innovators.

Two conceptions more remotely related than peasant farming and agricultural science could hardly have been found in old Russia.

The peasants jogged along as best they could without the aid of science or any prospect of receiving it.

Only after the establishment of Soviet Government did agriculture develop into a concerted effort for high crop yields, with the state directing and supporting it as a prime duty.

In a comparatively short time all conditions have been created in the Soviet Union for the unrestricted development of agricultural research on a scientific basis.

There are now over 14,000 scientists at work in agricultural research.

In the Soviet Union there are 90 agricultural research institutes, 367 experimental stations, and 507 experimental farms with numerous branches, whereas in Tsarist Russia institutions of the kind could have been counted on one's fingers. But that is not all. Bearing notable witness to the tremendous interest of the Soviet peasantry in scientific agriculture, there are about 20,000 small but efficient laboratories functioning on the collective farms (kolkhozes). It is not difficult to imagine on what fertile soil falls every scientific discovery and innovation.

1. In 1938 seventy per cent of the area under grain in the collective farms and State farms was sown with high-grade seeds.

The State has organized 1,547 experimental farms for the testing of cereal seeds in all parts of the country. Furthermore 693 agrochemical laboratories have been organized by the machine and tractor stations.

In the U.S.S.R. no scientific discoveries are left to grow cobwebs. They are immediately put to exhaustive tests and practical use. It is easy to imagine what a great incentive to scientists is thus provided.

For instance: in the spring of 1936, the All-Union Institute of Seed Selection and Genetics sent a newly-evolved variety of spring wheat ("Lutescence 1163") to a large number of collective farms for propagation. The members of the "Fifty-First Perekop Division" Kolkhoz (Odessa region) received 6.5 lbs. of seeds for their laboratory. They proceeded with enthusiasm to their propagation. This half peck of seed produced a yield of 13.5 cwt. in the first year. In 1937 the kolkhoz collected a harvest of 167 cwt. from the new variety of spring wheat. And a year later "Lutescence 1163", which has proved to be the highest yielding grain in the

southern districts, held dominion over 2,470 acres in this farm.

Rapid developments are being made in the theory of controlling vegetable life to reform inherited characteristics for the benefit of agriculture.

The late I. V. Michurin, a member of the Academy of Sciences, working in the same field as Luther Burbank, proved that under suitable conditions young hybrid seedlings can be trained to develop any desired characteristics.

Michurin took hardy wild plants from Siberia, Canada and various mountain regions and crossed them with delicate southern plants. The cross-breeds so obtained inherited all the hardihood of the wild flora : resistance to frost and drought and immunity to disease. On the other hand, they resembled their delicate parents of the south in tastiness, brightness of colour, largeness of fruit and other desirable characteristics.

In this way Michurin bred a large number of remarkable varieties of fruit, among which we might mention the Belfleur Kitaika apple, the Krasa Severa cherry and the Michurin Beurre.

As a result of a number of interesting and original experiments he also succeeded in hybridizing the cherry and bird cherry, the peach and the almond, the apricot and the plum, and many other fruits.

Altogether Michurin evolved 300 valuable varieties of fruit.

Michurin's work has found many followers. Michurin orchards and Michurin clubs have sprung up in all parts of the country.

Year by year grapes and peaches, pears and lemons continue their triumphal advance to the north, spreading over

to new territories. In the U.S.S.R. alone about 10,000,000 Michurin trees have borne fruit by 1940. The fruit gardens of the U.S.S.R., covering an area of 3,211,000 acres, produce more than twice as much as during Tsarist regime.

Apart from State-owned orchards there are large kolkhoz orchards supplying the market. The district of Genichesk, Zaporozhye Region, where in 1917 there were neither orchards nor vineyards, now has 1,069 acres of orchards and about 1,000 acres of vineyards.

Michurin's labours have introduced important new factors in the development of citrus plants and other sub-tropical crops. Now in the coastal regions of the West Caucasus new plantations of oranges, lemons, tangerines and tea are being developed year by year. Sunny Georgia is becoming the supplier of citrus fruits for the whole country.

In 1938 over 250,000,000 of the oranges and lemons placed on the market were grown on State farms and collective farms. In 1940 the Georgian Republic had 50,000 acres under citrus fruits.

2. Trofim Lysenko, member of the Academy of Sciences, is another outstanding scientist whose work has greatly assisted the development of Soviet agriculture. He is the author of the theory that the development of annual plants proceeds by stages. The first and second of the stages he found to consist in reaction to temperature and light respectively, and upon these he concentrated.

From these studies Lysenko evolved a new process in scientific farming: *vernalization*, that is, *subjecting the seeds to indoor temperature before planting*. The experience of tens of thousands of farms has shown that as a result of vernalization the seeds sprout two or three days earlier, while the yield increases by an average of 90-180 lbs. per acre.

The vernalization of grain crops is practised on a wide scale in the U.S.S.R. In 1938 the area under vernalized grain reached 24,700,000 acres, and in 1939, about 35,748,000 acres.

The vernalization of sugar beet, potatoes, cotton and other crops is also widely practised in the U.S.S.R.

Lysenko has also devised new methods of selection. Using these methods he has produced in the space of two and a half years excellent varieties of spring wheat in the Odessa Region. With his colleagues, Lysenko has devised a method of improving the seeds of self-fertilizing plants by interbreeding and nursing them on seed plots.

The farms using these improved seeds gain an extra yield of 134 to 178 pounds per acre.

3. The writer himself is working on cross-breeding cultivated plants with extraneous wild grasses. We have made many successful experiments in crossing wheat with couch grass, and have discovered the varieties of this very common weed and cross with wheat. In 1930 I produced the first hybrids of wheat and couch grass. This led to the novel hypothesis that a new variety of plant, non-existent in nature, might be obtained—perennial wheat. In 1934 the first families of perennial hybrid wheat, Nos. 34085 and 23086 were selected. They proved my theory.

These perennial wheats have the unusual power of growing again after reaping. It has been demonstrated under experimental conditions, with three years' continuous vegetation, that these hybrids yield seven or eight harvests from a single sowing.

At the present time perennial wheat is being tested by our farmers. Even under the unfavourable climatic conditions

of 1938 in the Moscow Region perennial wheat yielded as much as 19 cwts. per acre. Perennial wheat also has exceptional drought-resisting properties.

In addition to these perennials, annual forms of the same hybrid have been evolved with numerous valuable properties and characteristics of their own.

At an experimental station in Voroshilovsk (North Caucasus) the agronomist Derzhavin is working on important experiments towards hybridizing a variety of hard wheat with perennial rye. He too has evolved a triennial wheat.

My theory that every agricultural plant can be matched with a wild one has become a principle guiding many research workers.

The results of these studies in wheat breeding, so wide and diversified, have already been put to practical use in Soviet agriculture.

Wheat, like Michurin fruits, is being grown further and further north and spreading over wider areas every year.

In the old days the central regions of Russia proper grew nothing but rye. Wheat bread was a rare delicacy on the table of the Russian peasant, and was regarded as a sign of prosperity.

At the present time wheat is being sown in a large number of new regions. Even where the climate is severe for wheat, there are no peasants who go without white bread.

The conquest of the Arctic, the discovery of new deposits of coal, apatite, iron and other economic minerals in the far north of the country have led to the population of uninhabited districts and created a demand for local farm produce.

In this direction useful work is being done by the Arctic experimental station of the All-Union Institute of Plant Growing, directed by Academician Eichfeld. This polar station has evolved new kinds of barley, oats, vegetables, fodder grasses, potatoes and other edible roots suitable for cultivation in the far north.

In the Republic of Yakutia, with its perpetually frozen soil and brief dry summer, the kolkhoz farms, by employing advanced agrotechnical methods and cultivating the soil with tractors, are getting harvests regularly. For instance, the Orjonikidze Kolkhoz, in a district where the annual mean is 9 dgs. C., grows 22 tons of cabbage to the acre.

4. Before the October Revolution there was no hothouse farming in the Far North. Now there are 73,000 hotbeds and 451,920 sq. feet of greenhouses. On the shore of the Kola Strait, near Latitude 70 dgs. N., the collective fisheries "Tarmo" and "Taisto" obtain over 8 tons of potatoes and sixteen tons of other edible roots to the acre. In 1938 the "Industria" State Farms in the Murmansk Region harvested 12,792 cwt. of vegetables, about 28,000 cwt. of potatoes, thousands of centners of edible roots and tens of thousands of centners of hay. Apart from sowing in the open field this State farm also has a large area under glass, which in 1938 yielded 436 tons of vegetables.

The growing of greens in the open air has now become practicable right up to the shores of the Kara Sea and the Siberian coast of the Arctic ocean.

Soviet agricultural science has been highly successful in naturalizing crops in new localities. The Kuban is now growing rice, while the North Caucasus and the Ukraine are growing cotton.

New sugar beet districts have been developed on the Kuban, in the Saratov Region, the Altai territory, and other parts of the country. By 1937 the area under cotton in the U.S.S.R. had reached 701,480 acres, and in the Ukrainian S.S.R. 553,280 acres.

5. The great emigration of crops to the north of the country was undreamed of by agronomists in the old days. It has become possible, due largely to the fruitful labours of Soviet scientists in genetics, selection and seed farming. The U.S.S.R. has the most northern cotton plantations in the world, extending to 48 dgs. N.

In Azerbaijan (Caucasus) and Turkmenia (Central Asia) new varieties of Egyptian cotton have been produced and are already being cultivated in the collective farms and State farms. These varieties are extremely fertile and ripen early.

In 1930 the plantations of Egyptian cotton in the U.S.S.R. covered a total area of only 11,830 acres. In 1938 Egyptian cotton was being grown over an area of 339,748 acres.

Highly fertile varieties of American cotton, with a long fibre, have been evolved by selection and are becoming widespread.

The Odessa Institute of Selection and Genetics (directed by Academician Lysenko) has bred two new fertile and early-ripe varieties of cotton (OD-1, OD-2) growing a long fibre. In 1938, 50,000 acres of land were planted with these varieties.

A number of successful experiments have produced several new varieties of sugar beet with a high sugar content and other valuable properties.

6. Soviet selection experts have also evolved highly fertile varieties of potato. For the first time in the history of the

science of selection, the Potato Institute has produced a variety (No. 8670) that resists parasites (Phytophthora). With the help of the collective farms this institute in four years obtained 11,500 tons of potato from 20 beds planted with "8670".

Lysenko has also elaborated a method of planting potatoes in summer which has revolutionized the development of this culture in the steppes of the U.S.S.R. Formerly planting stock in the south had to be completely renewed every two or three years with seed potatoes from districts further north. This was regarded as the only method of preventing potatoes from running to seed in southern districts, like the Crimea, where the crop scarcely recompensed the farmer for what he had sown. Summer planting put an end to this. The collective farms and State farms in the south now obtain good crops regularly every year. For instance, the "Chervonny Kazak" Kolkhoz in the Jankoi District of the Crimea increased the yield to ten and a half tons per acre by using Lysenko's method.

7. Great progress has been made by Soviet scientists in the protection of plants against pests and blights.

Especially wide use is made of oophagous trichogramminae to combat destructive moths and grubs. Hundreds of special laboratories for the breeding of trichogramminae have already been organized on kolkhoz farms.

One of these laboratories, directed by collective farmers Moskalenko of the "Shlyakh Lenina" Kolkhoz, Yampol District, Vinnitsa Region, Ukraine, bred 37,000,000 of these insects, which afterwards rid an area of 914 acres of destructive moths.

Soviet research laboratories have discovered a number of viruses for use in combating various agricultural pests and diseases.

8. Great progress has also been made in the field of agro-chemistry. Academician Pryanishnikov has discovered the principle of using ammonia salts as fertilizer.

In recent years leading collective farmers, State farm employees and managers of kolkhos laboratories have been experimenting with the "dieting" method, that is, dosing crops with fertilizer at various stages during the vegetation period. At the present time this method is being used on huge areas, particularly those under industrial crops.

In Tsarist Russia the outlay of potassium fertilizer was something less than a teaspoonful to the acre.

In the U.S.S.R. mineral and natural fertilizers are used in vast quantities. In 1937 ninety per cent of the beet fields and cotton plantations were enriched with mineral fertilizer. At the same time there is a constant increase in the general distribution of manure.

In 1937 the chemical industries of the U.S.S.R. supplied the countryside with 2,798,000 tons of mineral fertilizer, as against 230,000 tons in 1913.

Among the great achievements of Soviet agricultural science we must also count the introduction of bacterial fertilizer—nitragin—for various bean cultures, and the invention of a bacterial fertilizer—"Azotogon"—for cereals, industrial crops and vegetables. Experiments have shown that this fertilizer increases harvests by as much as 20 and 30 per cent.

9. The Tractor Institute and a number of tractor plants have designed and built tractors powered with Diesel engines and gas producers, which, as tests have shown, run at a low cost and give long service without repairs.

The Institute of Scientific Sowing has designed machines for sowing in close drills. When sown in the usual way plants often grow in adverse conditions, are ill-nourished, stifled by their neighbours and stunted in development. The new seeders will make it possible to distribute the plants more rationally, so as to guarantee, as far as possible, a place in the sun for all. New types of seeders have been invented for grain crops, sugar beet and other industrial crops. In 1939, 2,717,000 acres were sown with these close seed drills.

Under the First Five-Year Plan much was done in theory and practice to improve grain harvester combines. Special attachments were derived for collecting sunflowers, castor oil plants, millet and other crops.

Soviet inventors have devised a special harvester combine for collecting grain crops in the humid conditions of the northern districts. Hundreds of these special "northern" combines were employed during the harvest last autumn. Soviet engineers have also designed machines for the planting, cultivating and picking of potatoes, sugar beet, flax, cotton, and other crops laborious to farm.

10. No less progress has been made by Soviet scientists in the field of livestock breeding. I might mention the work of Academician Ivanov, who is breeding valuable hybrids, notably the Askana Rambouillet and a new breed of pig—the Ukrainian White.

The All-Union Institute of Animal breeding has developed a method and technique of inseminating animals artificially, so as to make the maximum use of valuable males.

In 1938, 1,536 cows were inseminated from one bull and produced 1,490 calves, 15,016 sgeco were inseminated from one ram and produced 15,662 lambs. By 1938 fifty million

farm animals had been inseminated artificially in the Soviet Union.

11. Whatever branch of agriculture we take we find thousands upon thousands of collective farm experimenters working shoulder to shoulder with scientists in search of new methods, new discoveries.

This movement of innovators, boldly and rationally transforming nature, is becoming a real mass movement, a movement of the people. This was seen from the fact that at the All-Union Agricultural Exhibition of 1939, which exhibited only the best of the best, 160,000 to 200,000 collective farms, State farms, machine and tractor stations, collective farm brigades and teams were represented—real enthusiasts and front-liners of Socialist agriculture.

This close contact between Soviet science and the people allows our men of science to go boldly ahead with their experiments, enriching the collective farms and State farms with a wealth of modern scientific discovery.

Much has been and is being contributed to science by the practical experience of the collective farmers. Soviet academicians and professors, all our leading scientists, make these contributions the basis of their work in the service of Soviet science and the Socialist farms of the U.S.S.R.—the country of large-scale agriculture unmatched in the world.

Ivan Michurin often said : "*We can expect no favours from Nature ; our job is to take them.*".

In the U.S.S.R. thousands of people are taking part in this great duel with Nature, in a true spirit of innovation, enthusiasm, pertinacity and research. That is why the reorganization and renewal of the countryside in the Soviet Union has in the space of twenty-one years, produced such astonishing results.

THE STATE FARMS

BY

P. LOBANOV

1. Agriculture. 2. Socialist farms. 3. Livestock.
4. Experts employed. 5. Wage increase. 6. Eight-hour day. 7. Good harvest.

Old Russia was primarily a country of small-scale peasant agriculture. The great mass of the peasants held tiny plots of land while hundreds of millions of acres of the best land belonged to the royal family, the church, the nobility, and the kulaks, who exploited the poverty of the peasants to cultivate their estates. The only agricultural implements available to the peasants were primitive wooden ploughs and harrows that did little more than scratch the soil. Peasant farming before the Revolution was a constant struggle for meagre harvests, under the threat of drought and famine.

1. Agriculture in the Soviet Union presents a totally different picture. The peasants have pooled their resources in large-scale collective farms, the *kolkhozes*. Moreover, 6,350 machine and tractor stations have been opened—State enterprises through which the Soviet Government renders the collective farmers scientific and technical assistance. In 1938 there were 483,500 tractors at work in the fields of the Soviet Union, 153,500 harvester combines and hundreds of thousands

of other complex agricultural machines. In addition to the collective farms, which are co-operative bodies of peasants working and owning the implements in common, there are large-scale State agricultural enterprises, State farms, which are run on industrial lines.

The first farms were organized by the Soviet Government in 1918, but their rapid development began in 1928-29 when, on the initiative of Stalin, large State grain farms using modern methods were organized all over the country. By the spring of 1930, 143 State grain farms had been organized. After them came large-scale stock-raising farms.

There are State farms in all parts of the vast Soviet Union: in the steppes of North Caucasus, the Crimea, the steppes of Orenburg, the Trans-Volga districts, and the spreading plains of Kazakhstan and Siberia.

2. The history of the State farms is one of the chapters in the great campaign for the reorganization of agriculture, the development of large-scale Socialist farms. As a result of this struggle the Soviet Government broke the resistance of the enemies of the Soviet people, who tried to frustrate the development of State farms by sabotage.

Hundreds of large State grain farms and stock-raising farms are now thriving in all parts of the Soviet Union and have become an abundant source of grain, meat, milk and other supplies.

Already in 1930 the State grain farms supplied the country with 553,650 tons of grain. In 1933-37 the State grain farms and stock-raising farms, controlled by the People's Commissariat of State Farms, supplied the country with

9,136,600 tons of grain, 1,120,400 tons of meat, 4,095,000 tons of milk and 65,500 tons of wool.

2. In order to put an end to kulak exploitation and save the peasants from hunger and poverty it was necessary to show them in practice all the benefits and the advantages of large-scale, mechanized Socialist agriculture. The State farms, equipped with up-to-date machinery and rationalized with the latest methods of agronomy and scientific animal husbandry, showed the peasants the advantages of large-scale Socialist agriculture. Thereby they played a great part in collectivization, the reorganization of peasant farming on modern lines.

By January 1, 1939, the number of state farms in the U.S.S.R. had reached 3,957. They now occupy an immense area of 168,000,000 acres.

The majority of the state farm have been organized on land where Tsarist Russia, with its backward agriculture, could make nothing grow. *In other words, tens of millions of acres of land previously uncultivated, have been brought under the plough.* There are State farms in all the republics and regions of the U.S.S.R., even in localities where the population had previously been non-agricultural.

Besides producing foodstuffs for the urban industrial centers—grain, meat, milk, butter, fruit and vegetables—the State farms supply raw material for our industries—cotton, flax, wool, sugar beet, vegetable and essential oils, etc.

There are also special State farms for breeding reindeer and various animals valuable for their fur, such as sables, martens, raccoons, and silver foxes.

The State farms as in 1938 can be classified as follows :

Type	No. of farms
Grain-growing	477
Cattle-breeding	771
Pig-breeding	629
Sheep-raising	200
Growing cotton and other fiber crops	54
Growing special crops (tea, tobacco, etc.)	114
Fruit, vegetable and vine-growing	645
Studs	118
Reindeer-breeding	31
Poultry-raising	102
Suburban (chiefly for vegetables and dairy produce, and miscellaneous)	816

The scope of State farming may be seen from the fact that the total sown area of the State farms in 1938 was 30,628,000 acres.

3. The total livestock of the State farms is 2,597,000 head of cattle, 1,830,000 head of hogs and 5,676,000 head of sheep.

Under the first two Five-Year Plans the State invested about 15,000,000,000 rubles in the development of state farms and their technical re-equipment.

The State farms are powerfully equipped with machinery. The number of tractors, harvester combines, motor trucks and various farm machines is growing from year to year. The quality of these machines is constantly improving : old types of machines are being replaced by modern and more powerful ones. A good proportion of the tractors now in use on the State farms are of the large caterpillar-

type, while Diesel tractors and gas generator tractors are being introduced on a wide scale, and, with them, the giant harvester combine.

In the last ten years the number of tractors in the State farms has increased $12\frac{1}{2}$ times, aggregating 1,751,800 horse power. In the State farms there are 26,000 harvester combines and 30,600 motor trucks.

In the State grain farms 94.5 per cent of all work is now being done by mechanical traction while the harvesting is done exclusively by combines.

The wide use of machines on the State farms and collective farms has introduced new occupations in the countryside—tractor driving, combine operating, mechanics, truck driving, which were unknown in the old Russian countryside. In order to satisfy this demand for skilled labour a great network of technical schools has been organized. Many of the schools are located directly on the State farms. Between 1931 and 1937 the State farms under the People's Commissariat of State Farms alone trained 200,000 tractor drivers, 52,000 combine operators, 25,000 assistant combine operators, 6,000 mechanics and 27,000 foremen for grain farms and stock farms. The State farms run various schools and study courses to train skilled personnel not only for themselves, but for the kolkhoz farms too.

4. The State farms employ numbers of agronomists, engineers, animal breeding experts, and veterinary surgeons. These professions are taught in a large number of special agricultural institutes and colleges. Through the institutes and colleges under its jurisdiction, the People's Commissariat of State Farms has during 1931-37 trained 2,000 engineers, 2,600 agronomists, 7,500 animal breeding experts, 3,500 veterinary surgeons. Furthermore, large

numbers of agricultural experts for the State farms have been trained in other institutes of education.

The leading workers in the State farms—the Stakhano-vites—are making world records with their tractors, harvester combines and other machines.

The tractor driver Belenko, of the “Bataiski” State Farm (Rostov Region), decorated by the Government for his distinguished services, ploughed 5,965 acres in one season, while the tractor driver Kostenko of the Kropotkin State Grain Farm (Krasnodar Territory) ploughed 6,538 acres.

The tractor drivers Kopytko and Kovtun of the “Gigant” State Farm in North Caucasus, sowed 642 acres a day with 6 seeders hitched to a tractor of the caterpillar type.

During the harvest season of 1938 Bankin, a combine operator of the Privolensk State Cattle Farm (Rostov Region) harvested 6,290 acres of grain with a tandem of two combines, while Galunchikov, a combine operator of the “Podovinnoye” State Farm (Chelyabinsk Region), harvested over 3,700 acres and threshed 3,500 tons of grain.

Labour productivity is increasing in the State stock-raising farms also.

In 1938, for instance, Ulyana Barkova of the State dairy farm “Karavayevo” (Yaroslavl Region), got 8.8 tons of milk per cow. Kuznetsova of the “Kurkino” State Dairy Farm (Vologda Region) has reared over 1,000 calves without losing a single one. Every year, Lavrishko, the grazier of the Proletarsky Sheep Farm, North Caucasus, has 150 new lambs for every hundred ewes.

Modern machinery efficiently used has greatly increased the productivity of labour on the State farms and their output.

In 1938 the State farms supplied the State with almost ten times more grain and meat and five times more dairy produce than in 1929.

The Soviet Government is taking good care that the workers in the State farms should have proper working conditions and living conditions.

The earnings of the regular workers in the State farms have increased more than two and a half times since 1932. In 1932 the annual earnings of the regular workers averaged out at 910 rubles, in 1938 the average was 2,396 rubles (an increase of 163 per cent). This increase has been particularly great in the case of the workers employed on the pig breeding farms: from 777 rubles a year to 2,499 rubles—a more than three-fold increase. In the same period the workers in the State sheep farms increased their earnings by 169 per cent (from 847 to 2,278 rubles a year), the workers in the State dairy and meat farms—by 160 per cent (from 854 to 2,219 rubles a year) and the workers in the State grain farms by 128 per cent (from 1,201 to 2,742 rubles a year).

5. There has been a considerable increase in recent years in the wages of tractor drivers, combine operators, milkmaids, and other skilled workers. In August 1935 tractor drivers earned an average of 216 rubles a month during the harvest. In August 1938 the average was already 383 rubles (an increase of 77 per cent). In April 1935, milk-maids earned an average of 96 rubles a month. In 1938 they earned 174 rubles (an increase of 81 per cent).

6. The state farms have an eight-hour day. Every worker has an annual vacation with pay. Many workers spend their vacations in sanatoria and rest homes at the expense of the State.

Many State farms are real townships, populated by thousands of people. Every state farm maintains nurseries, maternity homes, hospitals, clinics and schools, all expenses being borne by the State.

There is little to distinguish life in the State farms from the life of the workers in the towns. In the "Electrozavod" State Grain Farm (Chkalov Region), for instance, the workers have a club, a moving picture theatre, a large library, 9 elementary and secondary schools, courses in agricultural training, a hospital with 35 beds, a clinic, a drug store, nurseries, etc.

One hundred and thirty comfortable and well-designed houses have been built for the workers. All the apartments have electricity and radio installations.

Who are the men who manage these great enterprises?

They are engineers and agronomists, most of them former workers, collective farmers, agricultural labourers who came to the State farms to perform simple, unskilled labour and acquired experience and a preliminary training which they later continued in special schools and colleges.

Here is the story of Denis Pavlovich Drieg, the assistant director of the Chkalov large-scale State grain farm (Zaporozhye Region). The son of a farm labourer, he began at the State farm as a shepherd. After completing short courses in tractor driving he began to work as a tractor driver, then became a combine operator. Later on he graduated from the Institute of Mechanization. He has been decorated by the Government for his distinguished work.

Or another example—Piskarev, the director of the Ust-Medveditsk State Cattle Farm (Stalingrad Region) the

son of a workingman. His career can be stated briefly: he worked in the engine room of a Volga steamer, then at a corn mill. Later he became an artificer and gave up his trade to study at an agricultural institute. Eventually he became the technical director of the October State Farm (Voronezh Region). Now he directs a great stock farm.

Many State farms are already models of good organization and efficiency.

7. One of the oldest and best-known State farms, not only in the U.S.S.R., but also to people abroad, is the "Gigant" Grain Farm in the steppes of the North Caucasus. In the years 1937 and 1938 it has averaged about 0.8 tons of winter wheat per acre from an area of 39,500 acres. This farm also has 3,200 head of cattle, 5,400 sheep, 700 pigs, 260 horses. In two years it has produced 10,500,000 rubles' worth of foodstuffs and made a profit of 2,785,000 rubles.

The "Kirov" State Grain Farm, situated in an arid zone of Kazakhstan which has a rainfall of only 220 mm. a year, now gets good harvests regularly. In 1938 it averaged 0.8 tons of grain per acre from an area of 61,750 acres.

In the "Karavayevo" State Dairy Farm the yield of milk in 1938 was 6.15 tons per cow from 251 cows. Almost half of the livestock are cows which have calved for the first and second time and give an unusually high yield of milk for their age. Since her second calving, for instance, the cow "Blagodat" has yielded 9 tons of milk.

The record making cow "Poslushnitsa" which was reared on the same farm yielded 16.3 tons of milk during her sixth lactation (1937 and the beginning of 1938).

The Proletarsky Sheep Farm has 22,000 head of *précoce* (early-maturity) sheep. In 1938, 122 lambs were obtained per hundred ewes; and in 1939, 147 winter (February) lambs per 100 ewes were obtained in six flocks. This State farm shears an average of 9.9 lbs. of wool per year per sheep. All the ewes on this farm have been subjected to artificial semination for some years past.

Another pedigree sheep farm, the "Bolshevik" (Orjonikidze Territory) has 34,000 sheep of the "Soviet Rambouillet" breed, a cross between the local merino and the American Rambouillet. The Soviet Rambouillet combines the weight of the American Rambouillet with a heavy fleece. The best of them weigh 264 pounds and higher and yield 35 pounds of wool at a shearing. The average fleece per sheep on this State farm sold 6,000 pedigree breeders to the collective farms.

The Third Five-Year Plan which started in 1938 could, till the outbreak of the present conflict in June 1941, contribute a great deal in making the State farms thriving concerns by continuing the mechanisation of agriculture and thus increasing the productivity of the labour in these farms.

COLLECTIVE FARMS (KOLKHOZ)

BY

F. KLIMENKO

1. During the Tsarist rule. 2. Capitalists driven out.
3. Equality Commune. 4. Work-day units. 5. Machine and tractor stations. 6. 93.5 peasant house-holds united.
7. Mechanisation. 8. Stock-raising. 9. Complete harmony. 10. Peasant woman.

1. In Tsarist Russia the 28,000 landlords owned 167,000,000 acres of land and the 10,000,000 peasant households 197,000,000 acres, of which the most fertile sections were owned mainly by the kulaks. Huge tracts of the best land were the property of the royal family and of the monasteries. The landlords and kulaks, who constituted somewhat over 13 per cent of the population, controlled 71.6 per cent of all the grain marketed.

The old villages were poverty-stricken and squalid : 65 per cent of the peasant households were made up of poor peasants ; 30 per cent had no horses and 34 per cent no agricultural implements, being obliged to hire them from the kulaks if they wanted to cultivate their tiny allotments or the plots they managed to rent from the latter or from the landlords. Most of the harvest went to pay for these services, leaving a bare pittance for the peasant's family. Fifteen per cent of the peasants did not have the wherewithal to sow any crops whatever. For many peasants a piece of unadulterated bread made of pure grain was a rare feast, since most of the year they ate all sorts of substitutes.

Every year 2,000,000 poor peasants left their homes to work on the landed estates and kulak farms in the Kuban and the Ukraine.

Yuzkui, the village where I was born, can serve as a vivid illustration of the backward and impoverished condition of the peasants before the Revolution, and the brutal exploitation to which they were subjected.

There were 3,000 households in our village. The best lands belonged to the landlords Virkentin and Fischer, and were worked by hands hired in our village and the nearby villages and by landless peasants from other parts of the country who were driven by poverty and hunger from place to place in search of work and bread. The peasant allotments in our village were only about five or six acres, and never more than eight.

The land was worked in an extremely primitive way : a piece of land was sown, the crop harvested and then was left to lie fallow while another plot would be cultivated. Crop rotation and scientific farming had never even been heard of. No fertilizers were used on the land. Selected seed was quite out of the peasant's reach. Only very few among the peasants owned metal ploughshares or reapers. Most of the Yuzkui peasants used antiquated wooden ploughs and flails. Nor did every peasant have a horse. Those few who could boast of one, for the most part possessed only some sorry old nag. It is small wonder then that the grain yield on the peasants' land was generally from 0.15 to 0.2 tons per acre, and decreased with every year.

Land hunger drove the peasants into kulak bondage. Here is the story of Ivan Ponomarenko, a former farmhand, now a collective farmer : "My father was a cowherd for

twenty years on the estate of a big landlord named Fischer. We were a big family, thirteen of us, all huddled together in a little mud hut. We never had a horse or a cow ; our livestock consisted of half a dozen hens. On the 1.3 acres of land we had, we planted potatoes. During 1914-18 I worked on the estate of Grand Duke Michael, the brother of Tsar Nicholas. I earned around forty roubles a year. Cabbage soup and millet was what I fared on. It was only on big holidays that I tasted meat."

This is how the poor peasants lived in Tsarist Russia ; nor were the middle peasants much better off.

2. *In November 1917 the workers and peasants drove out the landlords and capitalists, put an end to private property in land and turned over the big estates and the monasterial lands to the working people. The countryside began to emerge from its age-old ignorance and to refashion its life along new lines.*

The Communist Party and the Soviet Government showed the peasants that the only way they could put an end to kulak exploitation and, with it, to poverty, was by passing from petty individual farming to large-scale socialized farming. The Soviet peasantry adopted this way and began to set up artels—associations for the joint cultivation of the land—and in some cases an even higher form of collective farming—agricultural communes.

3. In 1921, our village of Yuzkui organized a commune which we called "Equality Commune." It was started by a number of Red Army men who had returned to the village after the Civil War—Nikifor Sologub, Ivan Chaplyga, Yegor Simonenko, Pavel Chernenko, Afanasy Pivovarov and my father, Nikita Klimenko, all former peasants of Yuzkui. Originally the Commune included eleven families. They received

land that had formerly belonged to one of the landlords' estates, pooled their horses, cows and agricultural implements, and, disregarding the kulaks' venomous threats and dire prophecies, set to work.

At first things were quite difficult. The Commune had no seed, only five horses, and nothing but a seeder and a buckler as regards equipment. But the Government gave us a helping hand, and the Commune began to grow and become strong. By 1927 it was already cultivating 925 acres of land and had 17 horses, 4 pairs of oxen, 42 cows, a large number of hogs, sheep and poultry.

Starting with 1918, peasants began to abandon their individual methods of farming and to adopt collective cultivation of the land. In addition to the communes, artels, or agricultural co-operatives, began to appear. The poor peasants were the initiators of these associations and their leading members. The middle peasants waited to see how things would turn out, undecided. However, when they saw with their own eyes the advantages and profit resulting from working in common, they too began to enter the collective farms (*kolkhozes*).

The State supplied the *kolkhozes* with seed, machinery and other agricultural equipment, and accorded them various privileges. With every year the number of collective farms increased. In 1918 there were 1,600 ; in 1923, 12,609 ; in 1927, 18,840 ; and by 1928, 33,258.

The influx of poor and middle peasants began on a large scale in 1929. By that time the Soviet Union, having restored its economic life after the devastation of the imperialist war and the Civil War, was developing industry at a rapid pace. The countryside was supplied with thousands

of first-class agricultural machines. *The collective farms expanded and took firm root. In 1930 their number increased to 85,900, and by 1934 it had reached 233,300.*

At the end of 1929 the various small kolkhozes and communes in our village, including our Equality Commune, merged to form the big new Stalin Commune. Our crops increased every year ; we acquired new machinery and equipment ; our income grew steadily.

It was not entirely smooth sailing, however. Not every member of the Commune came to work on time, nor did everyone work equally well. Yet all the members shared the benefits of the Commune equally.

At the Congress of Kolkhoz Shock Workers our chairman, Pivovarov, had a talk with Stalin. Stalin asked him many questions about our Commune. He wanted to know whether the members had cows, pigs and poultry for their personal use, and what difficulties they encountered. When he had heard all the details, he advised us to adopt the Rules of the Agricultural Artel and to supply every household with a cow, poultry, and so on.

We followed his advice and reorganized our Commune into a kolkhoz along the lines of the new Rules of the Agricultural Artel. The kolkhoz members were provided with cows, pigs and poultry for their personal use. We instituted rigid control of each member's output and divided our income in accordance with the number of work-day units each member of the kolkhoz had to his credit.

4. *What is a work-day unit ?*

It is the equivalent of the average amount of work that can be performed by a collective farmer in one working day, as fixed by the standard quota set for each type of work.

These quotas are fixed for each collective farm in accordance with the condition of the machinery, the draft animals, the soil, the difficulty of the work, the degree of skill required, and so on. For the performance of the specified day's quota of work the collective farmer is credited with one work-day unit.

If in the course of the day a kolkhoz member performs more than the specified quota, he is credited correspondingly with more than one work-day unit. Thus his share in the collective farm income depends on the quantity and quality of work performed. The work-day units are calculated and recorded by the head of the brigade in which the collective farmer works and by the quality inspector, after the work has been inspected.

This distribution of income according to the work performed helped to improve discipline and increase labour productivity. The farm began to develop even more rapidly.

The collective farm Rules definitely specify that on entering a kolkhoz the peasant must hand over to it the land he has been using, and also his draft animals and agricultural equipment. Cows, domestic animals and poultry are not subject to socialization, nor is the peasants' personal property. The public buildings of the collective farm—tables and sheds for its livestock and poultry, granaries, clubs, etc.—are in the collective use of the farm. In addition, every kolkhoz household is allotted a plot of land for personal use, where a vegetable garden or orchard can be cultivated for the personal use of the household.

5. To assist the collective farms, the Soviet Government has established machine and tractor stations all over the country. At present there are 6,350 such stations in the

Soviet Union. At the end of 1938, 483,500 tractors, 153,500 harvester-combines, 195,800 lorries, hundreds of thousands of tractor-drawn ploughs, seeders, cultivators, complex threshers and various other up-to-date agricultural machines were employed in the Soviet fields.

The attention accorded the peasants by the Soviet Government, its constant concern for their welfare made possible the successful introduction of universal collectivization and the transformation of the U.S.S.R. from a country of small-scale, backward agriculture into a land of mechanized agriculture on the largest scale in the world.

6. In the U.S.S.R. today there are 243,300 kol-khozes, which unite 18,800,000 peasant households, or 93.5 per cent of all the peasant households in the country.

Our collective farm numbers 674 families, 518 of which were formerly families of poor peasants. Nearly 30,000 acres of land have been reserved to us. The farm includes 1,480 acres of hayfield, 8,980 acres of pasture, 104 acres of woods which serve to protect the fields from winds, and 1,081 acres of vegetable gardens and orchards. Besides this, several hundred acres of land constitute the plots in the collective farmers' personal use.

The kolkhoz management board is elected at a general meeting of the membership. Important matters, such as the distribution of income, capital construction and large purchases, are decided on only by the general meeting.

In most of the collective farms the members are divided into brigades. We have twelve production brigades, whose heads are elected by the general meeting. We also have an agronomist, several breeding experts, and a veterinarian.

We have 13,830 acres under field crops, 60 per cent of which are grain. Industrial crops are raised on 1,270 acres, cotton occupying 1,185 acres. The rest of our land is allotted to fodder, vegetables and gourds.

Our collective farm is located in the South of the Ukraine, by the Sea of Azov. This region is rather arid, but we are learning to master nature, and our farm has large harvests of all crops every year. Despite the exceptional aridity of the summer of 1938, our average grain yield was 1,456 lbs. per acre, and the yield of non-irrigated cotton, the cultivation of which we first introduced five years ago, amounted to 715 lbs. per acre.

Scientific methods of farming and mechanization are helping us to combat drought. We are extending the area of autumn and early spring fallow for grain crops, ploughing the fallow in good time, and weeding it by tractor as often as six times. We plough by tractor to a considerable depth 8-9.5 inches, and use large quantities of potassium, phosphate and nitrate fertilizer in addition to manure. We sow only high-grade selected seed. For our spring crops—cotton, oats, barley and the rest—we always plough the land to a good depth in the autumn or early in the spring. We are boldly applying the latest discoveries of agronomy and the experience of the foremost Stakhanovites on our fields. Thus, for instance, vernalization methods recently evolved by Academician Lysenko have enabled us to increase the yield of cereals and cotton by 135-180 lbs. per acre.

7. *Mechanization is a most important factor in increasing the yield in our collective farm.* The entire spring and autumn ploughing is done exclusively by tractors. In 1938, 97.7 per cent of the area under grain was harvested by combines. All the land left fallow for the 1939 crop was

tractor ploughed, as was 77 per cent of the land ploughed in the autumn. Weeding, harrowing, clearing the field of stubble, and other processes have also been mechanized.

The number of our livestock is increasing as well. Our collective farm now owns 800 head of cattle, 460 horses, 7,000 sheep and 360 pigs, exclusive of the animals that are the personal property of the collective farmers themselves. The livestock is kept in light, warm and airy buildings, which have running water and are always clean and orderly.

8. Big progress in stock-raising has been made throughout the country. In 1938 alone, the number of horses in the kolkhozes increased by 8 per cent, the number of colts by 9 per cent, of sheep and goats by 19 per cent and cattle and pigs by 6 per cent.

The increasing yields and growing productivity in stock-raising are accompanied by an increase in the wealth of the collective farms and in the material well-being of the collective farmers themselves.

Whereas in 1930 the gross income of our kolkhoz was 424,000 rubles, by 1938 it had reached 3,300,000 rubles.

The greater part of the income is distributed among the members in accordance with the number of work-day units credited to them; 4.3 per cent goes for government payments, 0.8 per cent for managerial expenses. We also spend large sums for developing the farm and providing conveniences for our members. When the Commune was first organised, we did not have a single decent building, not a single machine of any kind. Now our streets are lined with well-built houses. We have 8 power engines and 9 trucks. Every brigade has its silo. The animals are housed in newly-built modern sheds and stables. Our buildings, tools and machinery total a value of nearly 2,000,000 rubles.

In 1933 every collective farm household in the grain regions received on the average of 1 ton of grain clear for the year. By 1937 this amount had risen to 2.36 tons.

The total cash income of the collective farms of the U.S.S.R. has increased during the same period from 5,661,900,000 rubles to 14,180,100,000 rubles.

In 1938 our kolkhoz distributed 1,960,000 rubles in money as the share due for work-day units. The income in kind is also divided in accordance with the number of work-day units, after deliveries to the State have been made, payment has been rendered to the machine and tractor stations for their services, seed has been set aside for the next sowing and fodder has been provided for the collective farm cattle. In 1938, our kolkhoz members received 11 lbs. of grain and 5 rubles 10 kopeks in cash for every work-day unit. Take collective farmer Borodin's family. This family received 6.7 tons of grain and 6,932 rubles in cash as their share of the collective farm income. Collective farmer Ponomarenko's family received 6.2 tons of grain and 6,326 rubles in cash. K. Pakhomenko, a Stakhanovite, received 5 tons of grain and 5,120 rubles in cash. Most of our collective farm members received similar incomes.

A life of prosperity brings culture with it. The Tsarist Government did its best to foster chauvinism and dissension; it incited the Russians against the Ukrainians, the Ukrainians against the Jews, the Georgians against the Armenians, and so on. In the U.S.S.R., with its Socialist culture, a great and inviolable friendship and amity exists between the various peoples and nationalities.

9. *Russians and Ukrainians, Jews, Gypsies and Poles live and work in complete harmony in our collective farm.*

Khalil Saitov is a Gypsy. He spent most of his life wandering over the steppes. His children were born in a cold, wind-beaten covered wagon. Now his family is happy and prosperous.

Makhail Piznoy is a Jew. He is in charge of one of our brigades and commands the respect and affection of all our members. His brigade has secured the high yield of 0.9 tons of grain per acre.

Boody, a Moldavian, was for many years a shepherd in the sun-scorched steppes ; he worked for next to nothing for the kulaks. Now he is a well-to-do collective farmer, and is in charge of a section on our farm.

Some twenty-five years ago, before the Revolution, it was no easy matter to get permisison to open a school in the country-side, and most of the children went without any schooling. Now we have plenty of schools. The kolkhoz also has a moving picture theatre for showing sound films, several clubhouses, a good library, a radio broadcasting station for local purposes, and a power plant. This year the members subscribed to 24,000 roubles' worth of books and periodicals. We have a maternity home, a nursery, a good public bath and a barber-shop.

The collective farmers' homes are lighted by electricity and comfortably furnished. Nearly 3,000 of our members have bicycles. The young people go in for sports (300 of our members have received the Voroshilov Badge for marksmanship), and are enthusiastic members of the club dramatics, singing and music circles. There are no illiterates in our farm. Eighty per cent of our members have had an elementary or secondary education, and 20 of the members have had a university education. Over 500 children attend the ten-year

secondary school. Twelve of our young people have graduated from agricultural or industrial training schools.

Hundreds of people who formerly went unnoticed have developed into capable executives in Government and public bodies. A. Pivovarov, formerly chairman of our kolkhoz, is now chairman of the executive committee of the District Soviet and has been awarded the Order of Lenin by the Government. N. Pikulsky is manager of the repair shop at our Stalin Machine and Tractor Station. P. Letugin took a post-graduate course at the Institute of Agricultural Economics and now occupies an important post in the People's Commissariat of Agriculture of the U.S.S.R. P. Ponomarenko is in charge of one of the biggest State farms in the Zaporozhye Region. I. Ivanov, a former member of our kolkhoz, is the chairman of a district executive committee in the same region. The names of Feshchenko and Valovaya, brigade leaders outstanding for the big harvests they secured, are known far beyond the bounds of our region. Grigory Koshka, one of our shepherds, is an outstanding Stakhanovite who gets letters from collective farms all over the U.S.S.R. He has achieved a record increase—over 140 lambs for every 100 ewes—in the size of his flock.

10. The collective farm system has opened broad prospects for the peasant woman both in production and in public life. It is helping to efface the distinction between town and country. Remoulding economic life in the villages, it is radically refashioning the people as well.

In February 1939 our collective farm was awarded the Order of Lenin by the Government for its outstanding achievements.

MACHINE AND TRACTOR STATIONS

BY

A. OSKIN

1. Huge tractor production. 2. Financed by State.
3. Proceeds go to the Government. 4. The difference.
5. Fifteen lakhs tractor drivers.

The Soviet Union completed two Five-Year Plans of economic development. In the space of ten years (1929-1938) large-scale industry in the U.S.S.R. increased its output by almost 400 per cent. A new array of mighty industrial plants, mills and factories arose throughout the country.

The Rostov Agricultural Machinery Plant alone produces more machines per year than were produced by all the agricultural machinery plants of Tsarist Russia.

1. Great tractor works were built at Stalingrad and Chelyabinsk, plants for the production of harvester combines were opened at Saratov, Zaporozhiye and Rostov. In machine building and tractor production the U.S.S.R. advanced to first place in Europe and second in the world while in output of harvester combines it rose to first place in the world.

Thanks to large-scale socialist industry, the Soviet Union was able to reorganize agriculture on completely new lines. By now, 18,800,000 peasants households, 93.5 per cent of the total number, had joined collective farms. The Soviet government supplied the collective farms with hundreds of thousands of tractors and harvester combines, a vast number of motor trucks, tractor-drawn farm implements and other machines.

This equipment, the last word in technical progress, is concentrated in the Machine and Tractor Stations (M.T.S.), which have become the principal state enterprises in the countryside, servicing over 250,000,000 acres of collective farm land.

In 1930 the U.S.S.R. had 158 Machine and Tractor Stations. By the beginning of 1939 their number had increased to 6,350, a great network extending from the White Sea to the Black Sea, from the Western frontiers to the Far East. In 1938, the Machine and Tractor Stations serving the collective farms had 130,000 harvester combines, 160,000 motor trucks, 105,000 threshing machines and 394,500 powerful tractors, and their number is steadily increasing. In addition there are hundreds of thousands of other machines and mechanical appliances in the Machine and Tractor Stations as well as a large number of well-equipped repair shops.

2. The Machine and Tractor Stations are financed by the State, and have no farms of their own. In 1938 alone the State assigned 7,000,000,000 roubles to the Machine and Tractor Stations. The work of each M.T.S. is planned in conformity with the work of the collective farms which it serves.

The stations work on the basis of a standard contract with the collective farms in their area.

Under this standard contract, which is legally binding, the particular M.T.S. undertakes to do certain work of a definite quality by a definite date in the given collective farm. On the other hand, the collective farm has specific agrotechnical and other duties to perform. It must do part of the work, mainly of an auxiliary nature, and provide draft

animals for hauling supplies of fuel for the tractors, and other purposes.

Through the Machine and Tractor Stations the State plans the process of production and the introduction of the latest scientific farming methods on a wide scale, thus ensuring big harvests regularly.

The work performed by the Machine and Tractor Stations is paid for in kind by the collective farms according to the rate fixed for each class of work. Thus, for threshing, the collective farm gives the M.T.S. from 4 to 6 per cent of the grain threshed by M.T.S. threshers.

3. The Machine and Tractor Stations render the entire proceeds to the state.

The Machine and Tractor Stations are well staffed with engineers, mechanics, agronomists, expert bookkeepers and accountants, land reclamation experts, hydraulic engineers and other trained men. Here we might add that the Machine and Tractor Stations are bound by contract to train a regular contingent of the collective farmers for skilled work.

During eleven months in 1938 the amount of tractoring performed in the collective farms by the Machine and Tractor Stations came to the staggering figure of 481,150,000 acres of conventional ploughing i.e., puoughing plus all forms of tractor work—sowing, harvesting, etc. Collective farm harvests have increased correspondingly. In Tsarist Russia the harvest of grain crops never exceeded 80,000,000 tons, while in 1937 the grain harvest in the U.S.S.R. reached 111,500,000 tons.

Before the revolution the cultivation of tea, citrus fruits, soya beans, kenaf, hemp, sesame, and rubber plants was unknown in the Russian countryside. Now, with the help of the Machine and Tractor Stations the collective farms

are making splendid progress in the cultivation of these and many other plants.

The concentration of machines in the Machine and Tractor Stations and the merging of the peasant farms into collective farms controlling vast areas of land have made it possible for many machinery to be used in agriculture to the utmost advantage.

In 1938 the average area farmed per M.T.S. tractor was 1,015 acres.

Stakhanovite tractor drivers cultivate as much as 5,000 acres with wheel tractors and up to 12,500 acres with caterpillar tractors.

The tractors on the collective farm fields do not work singly, but in teams consisting of a number of tractors with the requisite outfit of appliances and agricultural machines. The work of these teams is directed by mechanics and agronomists. Skilled men from the M.T.S. repair shops see to it that the machines are kept in good order. The M.T.S. tractor teams are attached to a definite collective farm for the whole season to complete all the work undertaken in the contract.

Through the Machine and Tractor Stations the collective farms are also served with harvester combines which have become the principal harvesting machines in the U.S.S.R. harvesting about one-half of the total collective farm area.

In one season, harvester combine operator Borin of the Steinhardt Machine and Tractor Station, in the Krasnodar Territory, harvested 4,940 acres of land under cereals, an average of 185 acres a day. 2,950 tons of grain passed through his bunker.

Thanks to such thorough mechanization, farm jobs take much less time than formerly, and the collective farmers are

able to get the sowing and harvesting done quickly without losses.

4. Prokhorov and Susopatieva of the Red October Collective Farm, Vozhgal District, Kirov Region tell us what a difference the Machine and Tractor Station have made.

"In the old days the peasants had to sweat blood for every pood of grain. We got from 300 to 375 pounds from the acre. Now we have the Machine and Tractor Station to help us. In $1\frac{1}{2}$ hours a tractor ploughs $2\frac{1}{2}$ acres, and a combine harvester harvests $2\frac{1}{2}$ acres in half an hour. The yield per acre has increased to 1,500 and 3,000 pounds."

The figures for 1937 show that collective farm labour is six times more productive than was farm labour in Tsarist Russia. Up-to-date mechanization is making agricultural labour more and more like industrial labour.

The collective farms have their own electric power stations, clubs, theaters and moving picture houses, laboratories, schools, nurseries, kindergartens, hospitals, athletic fields and radio centres. Farm life is rapidly coming up to urban standards.

Thousands of peasants' sons and daughters are studying in universities. Last year alone agricultural colleges gave the Machine and Tractor Stations and collective farms 12,732 experts in agronomy, veterinary science, scientific animal husbandry, irrigation, hydraulic land reclamation, mechanics and surveying. Every year about a milion persons take courses in mechanics.

In the village of Moskovskoye, Izobilensk District, Orjonikidze Territory, there are five schools, with a total attendance of 1,600 children and a teaching staff of 43. There are six stores, a hospital, a clinic, a drug store, a club with a library, a central school for collective farmers from the

surrounding districts and, of course, a Machine and Tractor Station—the industrial centre of the new, collective farm village.

The number of professional people in Moskovskoye is constantly increasing. Two local peasants have become professors, seven—doctors, thirty-six—teachers, twelve—agronomists, eight—engineers and ten hold commissions in the army. Before the advent of collectivization the two brothers, Michael and Alexei Tolin worked as farm hands for kulaks. Now Michael is a colonel in the Red Army and Alexei is a doctor. Ivan Chaiko, formerly a poor peasant, is now a scientist and lectures at a college in Leningrad.

Or take another village, Koltsovka, Vurnarsk District, Chuvash Autonomous Soviet Socialist Republic. Not so long ago the chairman of the local collective farm was Korotkov. He proved to be a capable executive and was promoted to a higher post. Now he is the People's Commissar of Agriculture of the Chuvash Republic.

There are many villages like Moskovskoye and Koltsovka in the U.S.S.R. Collective farmers become People's Commissars, tractor drivers become academicians, milkmaids become members of the Government. Such are the opportunities open to all in the collective farm villages.

In the old days there was no mass training of technical personnel for work in the countryside, there were no schools for young talent like the machine and tractor stations which are now training skilled labour for our socialist farms. New figures have appeared on the rural scene, people with semi-industrial professions formerly unheard of in the countryside.

5. By the most modest estimates the Soviet countryside has 1,500,000 tractor drivers and harvester combine operators, 124,000 truck drivers, 240,000 collective farm chairmen, over

535,000 field foremen and approximately 264,000 stockfarm managers and foremen.

This vast army of skilled people is working hard to increase the productivity of farm labour. In its front ranks are the Stakhanovites, people who know their work to perfection, people who have introduced new methods and efficient organization of work.

Take the Stakhanovites of the Kaganovich M.T.S. in the Krasnodar Territory. At this station, which employs 24 tractor teams, there are 200 tractor drivers. A hundred and forty-eight of them fulfil their assignments 200 per cent and over. Five of these teams consist entirely of Stakhanovites. Each tractor driver in these teams ploughs 18 acres with three-coulter ploughs to a depth of 7.9 inches. And the assignment is 8.6 acres.

The assignment for harrowing is 98 acres but these tractor drivers do 195.5 acres. The assignment for scarifying is 42 acres, they do 138.8 acres. The days' assignment for combine-harvesting is from 19 to 22 acres. Some of our Stakhanovite combine operators harvest 1,730 acres of grain, in the 22 days of the harvesting season.

Thousands of Soviet combine operators harvest from 2,500 to 5,000 acres in one season.

The Stakhanov movement in the countryside is advancing by leaps and bounds.

Millions of peasant families receive from 16 to 25 and more tons of grain a year in their collective farms. In addition to this income in kind the collective farmers receive cash. Exceptionally large money incomes are received by the collective farmers in the cotton, flax, stock-raising, sugar beet-growing and citrus fruit districts.

Before the advent of collectivization, Gerassimov, now a member of the Dimitrov Collective Farm in the Narimanov District, Stalingrad Region was a poor man. In the collective farm he became an expert farmer, a Stakhanovite. In 1938 his share of the collective farm income was 14,000 roubles plus several tons of grain, vegetables and other produce.

In 1938 in the Khanlar District of the Azerbaijan S.S.R. the Thaelman Collective Farm, consisting of Germans, received 4,450,000 roubles for its produce. The family of Robert Schmidt received 7,500 roubles in cash and 4,700 roubles worth of farm produce. In 1938 this collective farm spent 778,000 roubles on building extensions and cultural service for the collective farmers.

There are tens of thousands of collective farms like this one in the U.S.S.R.

In 1938, with my brother Arkhip, a combine operator like myself I harvested the collective farms in the Ilek District of the Chkalov Region. In 41 days the two of us together harvested 12,933 acres. Our earnings came to 42,315 roubles.

More and more collective farms are getting the benefit of M.T.S. service, and increasing their incomes beyond the million rouble mark. In the Nikolaev Region in the Ukraine 35 collective farms have become millionaire farms. In the Temruk District, Krasnodar Region 20 collective farms each receive incomes of over a million roubles. In the Ferghana Region, Uzbek S.S.R. in 1938 the number of millionaire collective farms rose to 320.

Under the collective farm system life in the villages of the U.S.S.R. has become prosperous and cultured. Socialist industry and collective agriculture complement each other, each assisting the other to attain further progress.

SOCIALIST FARMING

BY

K. BORIN

1. Wretched existence. 2. Amalgamation of peasant farms. 3. No more hired labour. 4. First place in the world. 5. Sugar beet and flax. 6. High productivity. 7. Stock-raising. 8. Rise in income. 9. Government aid. 10. Hundred agricultural research institutes.

On the morrow of the Great October Socialist Revolution the Soviet Government issued its Decree on the Land. The land, which for many centuries had been the object of the peasantry's struggles, was nationalized. It was proclaimed the possession of the Socialist state. Landed proprietorship was abolished. Over 370,000,000 acres of land that had formerly belonged to the landlords, the Tsar's family and the monasteries was transferred to the peasants for their free use, in addition to the land already held by them. The peasants were released from the burden of annual rent payments to the landlords, which amounted to over 500,000,000 gold roubles. The livestock and farm equipment confiscated from the landlords were also turned over to the peasants.

Before the Revolution the peasants led a wretched existence. They were ruthlessly exploited by the landlords and kulaks, tilled their soil with antiquated implements, eked out scanty harvests and suffered from frequent crop-failures. Ruin and starvation always stared them in the face.

The position of the peasants improved materially after the Revolution, which gave them land and freed them from their bondage to the landlords.

However, the agriculture of the country, represented as it was by 24,000,000 small and puny peasant farms, still remained in a backward state, without any prospects of extensive development. The division of the land into small holdings was not conducive to the introduction of tractors, harvester combines and other complex agricultural machinery. Nor did the small size of the farms afford the necessary opportunity for the application of scientific methods of farming and for proper crop rotations. The boundaries between the individual peasant holdings were marked by narrow strips of land overgrown with weeds which affected the neighbouring fields as well. Here was another instance of the economic waste that resulted from the prevalence of tiny individually-run farms.

Owing to the extremely low level of productivity of labour in the small peasant farms, the peasants had but very little grain surpluses left for sale over and above the amount they needed for their own consumption. Thus, for instance, in 1927 the production of grain in the U.S.S.R. had reached 91 per cent of the pre-war level, yet the grain available for sale to the towns amounted to barely 37 per cent of the pre-war total.

At that time the Soviet State, in order to provide for the needs of the urban population, had to purchase a considerable portion of the grain from the rich farmers—the kulaks—who owned large tracts of land. But the kulaks were hostile to the new, Socialist order and did everything to disrupt the Government's grain purchases and to cause famine in the country.

The country was faced with the alternative : either to introduce large-scale *capitalist* farming—which would have entailed the ruin of the bulk of the peasantry, the disruption of the alliance between the working class and the peasantry, the strengthening of the kulaks, and the defeat of socialism in the countryside—or to take the road of amalgamating the small peasant farms into large-scale *Socialist* farms, into *kolkhozes*—collective farms capable of using tractors and other modern machines—and thus bringing about a rapid improvement in farming and a rise in its output and marketable surpluses.

Naturally, the Soviet State chose the second road—that of developing agriculture along the lines of collective farming.

2. *However, the amalgamation of over 20,000,000 peasant farms into kolkhozes was no easy matter. It was not a job that could be accomplished at short notice. It was necessary to start with the industrialization of the country. An industry had to be built up capable of supplying agriculture with vast quantities of modern machines and chemical fertilizer. Furthermore, it was necessary to demonstrate and explain to the peasants, who had been accustomed to work each for himself on his own tiny strip of land, the advantages and benefits of large-scale farming. For a number of years the Soviet Government worked hard and persistently to bring about these necessary conditions.*

As industrialization was progressing, more and more machines were sent to the rural districts. In addition, the state granted the peasants liberal credits and sent people to help them organize. The peasants saw before them the example of the large state farms, of the already existing collective farms and the first State machine and tractor stations which served the collective farms ; they saw the wonderful

work of tractors and other machines capable of ploughing up any "hard ground," any virgin soil. All this induced the peasants to join the collective farms in ever increasing numbers.

Soon it became a mass movement, which assumed particularly large proportions in 1929-30. It was no longer isolated groups that joined collective farms, but the poor and middle peasants of whole villages and districts merged their farms and organized kolkhozes. The State, on its part, assisted the new kolkhozes in every way.

The successes of Socialist construction in the villages evoked increasing hatred and resentment among the kulaks, who realized that collectivization spelt the end of their exploitation and oppression of the labouring peasants. Many an initiator and fighter in the cause of collective farming was murdered by kulaks in those years. A good deal of collective farm property perished in fires set by enemy incendiaries.

Even prior to the mass influx of peasants into collective farms the Soviet Government had put into effect a number of measures designed to restrict the kulaks, who had been disrupting the State grain purchases and attempting to prevent the supply of grain to the country. The Soviet Government had imposed higher taxes on the kulaks, had required of them to sell grain to the State at fixed prices, issued a law on the renting of land, which limited the amount of land kulaks could use, and law on the employment of hired labour, which limited the scope of kulak farms.

Mass collectivization required the transfer to the collective farms of all available land. Since large tracts of land were held by kulaks, the peasants combining in kolkhozes drove their ancient enemies from the land, confis-

cated their livestock and machines, and demanded of the Soviet Government that the exploiters be deported. The mass movement of the peasants to join collective farms and the spread of universal collectivization enabled the Soviet Government to proceed from the policy of restricting the kulaks to a new policy, the policy of eliminating the kulaks as a class.

3. The Soviet Government repealed the laws on the renting of land and the hiring of labour, thereby depriving the kulaks both of land and of hired labourers. It lifted the ban on the expropriation of the kulaks and permitted the peasants to confiscate cattle, machines and other farm property from the kulaks for the benefit of the collective farms.

The millions of peasants wholeheartedly supported this policy of the Soviet Government, and it was crowned with manifest success.

With the help of the Socialist industries, which were supplying the countryside with increasing quantities of tractors and agricultural machines, the State farms and collective farms soon grew and developed into a serious force. Already in 1930 the collective farms and State farms produced more than 6,500,000 tons of grain for the market, thus exceeding by far the amount of marketable grain formerly produced by the kulaks.

At present 93.5 per cent of all the peasant households in the Soviet Union are united in 243,000 kolkhozes. This does not include the fishing co-operatives and the industrial co-operative societies operating in the rural districts.

In 1938, the State farms and collective farms of the Soviet Union had at their disposal 483,500 tractors with an aggregate capacity of 9,256,200 h.p., 153,500 harvester combines and 195,800 motor trucks. About 90 per cent of all

the tractors and combines now operating in Soviet agriculture were turned out by Soviet plants during the period of the Second Five-Year Plan (1933-37). In 1937 the Soviet chemical industry supplied the farms with 2,798,000 tons of mineral fertilizer ; whereas in 1913 Russian agriculture used only 230,000 tons of mineral fertilizer, most of which was imported from abroad.

The collective farms are rapidly approaching the point when all the farming processes will be mechanized. Tractors are being utilized with increasing efficiency. In 1938 the average amount of field work performed by a wheel tractor covered an area of 1,015 acres, and that performed by a caterpillar tractor covered an area of 2.755 acres.

The Soviet Union holds first place in the world in respect of efficient utilization of tractors. As for harvester combines, the average area harvested per 15-foot combine in 1938 was 743 acres.

The sown area increased from 259,350,000 acres in 1913 to 338,143,000 acres in 1938. An important feature worth noting in this connection is that, while the area under grain crops increased in the period mentioned by 8.5 per cent, the area under industrial and garden crops increased approximately 2.5-fold, and that under forage crops nearly 7-fold.

Farming in the Soviet Union is becoming more diversified and productive. Before the Revolution Russia produced annually 740,000 tons of cotton. Almost as much cotton had to be imported each year from abroad. In 1938 the cotton crop in the Soviet Union amounted to 2,690,000 tons. Today the textile industry of the U.S.S.R. is fully supplied with Soviet-grown cotton.

5. In the output of sugar beet and flax the Soviet Union holds first place in the world. In 1938 the Soviet Union

produced 546,000 tons of flax fibre, as against 330,000 tons in 1913. The output of sugar beet increased from 10,900,000 tons in 1913 to 16,680,000 tons in 1938.

As for grain crops, the position is as follows : in 1913 which was considered a bumper crop year, Russia harvested 80,100,000 tons of grain ; whereas in 1937 the Soviet Union reaped a harvest of 120,290,000 tons, and in 1938—despite the drought in the eastern and south-eastern regions—94,990,000 tons. There has been a corresponding increase in the amount of grain produced for the market. Statistical data referring to Tsarist Russia before the war show that in those years an average of approximately 21,300,000 tons of grain was placed on the market. In the Soviet Union, however, the average amount of grain crops available for sale in recent years was 37,700,000 tons. It is further necessary to bear in mind that while 71.6 per cent of all the marketable grain in Tsarist Russia was controlled by landlords and kulaks, all of the marketable grain in the Soviet Union at present is produced by Socialist enterprises—by collective farms and State farms.

6. *It is the high productivity of the State farms and collective farms that has enabled the Soviet people to fully solve the problem of supplying the vast country with all the marketable grain it needs.*

Prior to the October Revolution grain growing was very little developed in a number of central and northern regions, which were known in those times as “consuming” regions. Wheat was not sown at all in these sections of the country. At present these regions produce most of their own grain, including wheat, which gives splendid yields. Thus, for instance, the Pobeda Kolkhoz in Dmitrov District, Moscow Region, reaped a harvest of 1.05 tons of winter wheat per

acre in 1938. The former "consuming" regions are thus being transformed into producing regions.

Great progress has been made in the Soviet Union in the growing of tea, citrus fruit and other crops which were formerly imported from abroad. The extent of the expansion of sub-tropical crops in the Soviet Union may be gauged from the figures illustrating the development of agriculture in the Georgian Soviet Republic. Thus, 3,544 acres all told were planted to sub-tropical crops in Georgia in the course of 32 years prior to the Revolution (1885-1916) ; whereas the area planted to sub-tropical crops in Soviet Georgia in 17 years (1922-38) amounted to 163,272 acres, the crops including tea, tangerines, lemons, oranges, high-grade tobacco, as well as various valuable and rare trees, such as the tung tree, the bay laurel, the eucalyptus, etc.

In consequence of the growth of industry in the eastern regions of the Soviet Union and in the formerly industrially backward republics, of the creation of new cities and industrial centres and of the development of industries depending on agriculture for their raw material, it has become necessary to introduce such crops as potatoes, cotton, flax and sugar beet in many parts of the country where they were not grown before. While Central Asia still remains the principal source of the Soviet Union's cotton supply, cotton is now grown extensively in Transcaucasia and in many districts in the Stalingrad Region, in the Ukraine, in Crimea and on the Kuban steppes.

Great progress has been made in recent years in the old sugar beet districts. But, in addition, considerable amount of sugar beet are now produced in Western Siberia, in the Kirghiz Soviet Socialist Republic, in the Far East and in a number of other regions. Moreover, the Soviet beet-growers have succeeded in raising the sugar content of beet by one

per cent, which represents an additional 20,000 ton increase in the output of sugar.

7. The stock-raising industry in the Soviet Union has also made steady progress in recent years. In July 1938, the number of head of large-horned cattle was 63,200,000 as against 60,600,000 in Russia in 1916. Practically every collective farm has its stock-raising and dairy department. The Thaelmann Kolkhoz, for instance, in the Ramenskoye District, near Moscow, has been obtaining in its dairy an average annual yield of 4,860 quarts of milk per cow. There are thousands of dairies obtaining as high a milk yield as that of the Thaelmann Kolkhoz.

The Stalin Kolkhoz in the Gunib District in Daghestan owns 36,000 sheep, and the stock is being steadily improved by cross-breeding the local sheep with the "Wuerttemberg" type. The same kolkhoz has a stud farm with 570 thoroughbred horses, and a dairy with 880 cows. Here, too, the stock is being improved, by cross-breeding the native type with Swiss breeds. The Stalin Kolkhoz has an annual income of 2,250,000 roubles.

The Krasny Budyonnovetz Kolkhoz in Levokum District, Orjonikidze Territory, owns more than 35,000 sheep of the merino breed and mixed breeds. The kolkhoz is justly proud of its droves of thoroughbred horses, both Don and English breeds. The annual income of this kolkhoz reaches 5,000,000 roubles.

These are but two examples taken at random.

The economic activities of the collective farms are organized on the principles set forth in the collective farm Rules. An important feature of these Rules is that, in addition to safeguarding the interests of the kolkhoz as a whole, provision is made in them for the personal interests of the collective

farmers. *Every collective farm household has for its personal use a plot of land attached to the house, keeps a cow, small livestock, poultry, etc.*

As a result of the assistance provided by the State, every collective farm household now has in personal ownership at least one cow.

8. The following figures illustrate the steady rise in the incomes of the collective farmers. In 1937 each collective farmer family in the grain-growing districts received on an average 2.36 tons of grain as part of its share in the income of the collective farm, as against one ton in 1933. This grain was distributed by the kolkhozes among the collective farmers after they had laid aside the necessary grain and reserves for seed, stored away a sufficient amount to provide feed for the publicly owned livestock, completed their grain deliveries to the State and settled their payments in kind to the machine and tractor stations serving them. The cash incomes of the collective farms increased from 5,661,000,000 roubles in 1933 to 14,241,000,000 roubles in 1937, and the greater part of this sum was distributed among the collective farmers.

The collective farmers have mastered technique and show splendid examples of a Socialist attitude towards work. The following are a few instances in point.

The tractor drivers of Bartakovsky's brigade (Mozharsk Machine and Tractor Station, Ryazan Region) covered an average of 14,270 acres per caterpillar tractor in one season. In the brigade of Vera Bakhholdina (Talov Machine and Tractor Station, Altai Territory) the average per ChTZ caterpillar tractor was 12,612 acres. Bakhholdina is a member of the Supreme Soviet of the U.S.S.R.

The combine operators A. I. Bessonov and A. I. Sviridov (Krasnokholmsk Machine and Tractor Station, Chkalov

Region), working on two "Stalinetz" combines arranged tandem, harvested 12,597 acres in the season of 1938.

The great Russian scientist K. Timiryazev said that the man who would get two stalks of wheat to grow where formerly but one had grown would earn the gratitude of all mankind. This dream of the best minds in agricultural science is being realized by the Stakhanovites of the fields, the innovators in the sphere of agriculture.

In the Fyodorov Kolkhoz, Kalinin District, Kirghiz Soviet Socialist Republic, the yield of sugar beet has reached nearly 21 tons per acre.

In the New Light Kolkhoz, Glushkov District, Kursk Region, team leader V. A. Chalova, Member of the Supreme Soviet of the R.S.F.S.R., has obtained a yield of 42.8 tons of sugar beet per acre.

In the Litvinov Kolkhoz, Kirovabad District, Azerbaijan S.S.R., team leader Agdja Alieva has obtained a yield of 6.1 tons of cotton per acre.

The Stalin Rules Kolkhoz in the Altai Territory harvested 9.3 metric centners of wheat per acre on an area of 2,500 acres.

There are many kolkhozes and Stakhanovites who have obtained a yield of 3 and more tons of wheat per acre, one ton of flax fibre, 20-25 tons of sugar beet, etc. The splendid achievements of the Stakhanovite workers are soon emulated by the majority of the collective farms and collective farmers.

9. In their efforts to insure the further development and flourishing of socialist agriculture the collective farms enjoy the constant help of the Soviet Government. The Soviet State has expended over 2,000,000,000 roubles on irrigation alone, and has handed over to the collective farms 5,000,000 acres of irrigated land. It may be recalled in this

connection that the total expended on irrigation in pre-revolutionary Russia in 22 years—from 1896 to 1917—amounted to 35,000,000 roubles, and the irrigated land thus obtained—750,000 acres—was turned over not to the peasants, of course, but mainly to the Tsar's family.

Since farming in the Soviet Union is carried on in large-scale Socialist enterprises, there is every opportunity to make full use of the achievements of science in the field of agriculture.

10. *The Soviet Union has 100 agricultral scientific research institutes (of which there were none in Tsarist Russia) with branches and 367 experimental stations. In Russia in 1913 there were altogether 440 scientific workers engaged in agriculture, whereas in 1938 Soviet agriculture employed the services of 14,000 scientific workers and scores of thousands of kolkhoz laboratory managers—people who are boldly experimenting and introducing science and scientific methods in farming.*

Combine operators, tractor drivers and other skilled mechanics have made their appearance in the Soviet villages. In 1938 there were over 1,500,000 tractor drivers and combine operators in the Soviet Union and more than 300,000 agronomists, surveyors, zoo-technicians, veterinary surgeons and veterinary attendants. Among the collective farmers there are also hundreds of thousands of kolkhoz chairmen, brigade leaders, stock breeders, and workers of other specialties. *The road is wide open to every collective farmer to obtain an education in any line he may choose.* Quite a number of collective farmers have had academical degrees conferred on them. Trofim Lysenko, member of the Academy of Sciences of the U.S.S.R. and a scientist who has won world renown, was formerly a peasant ; his father is a peasant now in charge

of a kolkhoz laboratory in the village of Karlovka, Poltava Region.

The wide educational opportunities open to everyone in the Soviet Union may be best illustrated by a few specific instances. I shall mention the case of my friend Kolesov, a combine operator like myself. For a number of years we vied with each other for better work. The great distance between the Steinhardt Machine and Tractor Station in the Kuban, where I was employed, and the Totsk Machine and Tractor Station in Chkalov Region, where Kolesov worked, was no obstacle. Here is the story of Kolesov's life. In his younger years he suffered from want, toiled hard on his small farm and was dependent on the kulaks. In 1929 he joined a collective farm. When the machine and tractor station was organized in his district he went to work as a combine operator, attained a high degree of efficiency and was awarded the Order of Lenin. Kolesov continued to perfect his technical knowledge and general education and became a Stakhanovite. The people expressed their confidence in him by electing him deputy to the Supreme Soviet of the U.S.S.R. In 1938 Kolesov was Chairman of the Chkalov Regional Executive Committee. With minor variations, Kolesov's story is the story of millions of Soviet people, ardent patriots of their Socialist country.

I am now (1938) taking special courses in the Timiryazev Agricultural Academy in Moscow. My fellow students are 636 workers, 826 peasants, members of collective farms, 76 agriculturists and 652 employees. Before the Revolution only the children of princes, barons, landlords, merchants and kulaks could attend this Academy.

Such is the path which the peasants of the Soviet Union have traversed—from semi-starvation and primitive farming methods to flourishing farms, a life of prosperity and the heights of culture and knowledge.

RAPID INCREASE IN LIVESTOCK

BY

Y. LISKUN

1. Scientific research institutes. 2. 3.5 tons of milk yield per cow annually. 3. Artificial fertilisation. 4. Cross-breeding. 5. Darwinian Theory. 6. Close contact with production.

The Great October Socialist Revolution, which transformed the entire economic life of the country, has brought about a material change in the sphere of stock-raising as well. In Tsarist times stock-raising was practically the most backward branch of agriculture in Russia. The average annual yield of milk per cow was about 1,400 lbs., the average annual yield of wool per sheep amounted to 2.86 lbs., and the average carcass of beef equalled 220.5 lbs.

There was no "demand" for the science of animal husbandry in Tsarist Russia ; and the only institution that dealt with the scientific problems of animal husbandry was the Zoo-technical Laboratory founded by the Ministry of Agriculture in 1905.

At the time of the Revolution in 1917, there were altogether three colleges of agriculture maintained by the State. Three more schools of agriculture, which offered a higher course of study, were maintained by public organizations.

In the small and scattered peasant farms of Tsarist Russia stock was raised only for consumption and to supply manure.

Therefore, while the number of head of stock was fairly large, stock raising played rather a small part in the economic life of Tsarist Russia.

Under such conditions science, naturally, played an insignificant role. In the whole of Tsarist Russia there were 74 livestock experts with a scientific training. The budget of all the scientific institutions working in this field totalled about 100,000 roubles.

1. *An entirely different situation obtains in the U.S.S.R. at present. The problems of improving the stock and raising its productivity are dealt with in eighteen large scientific research institutes, 78 regional and republican zootechnical stations with 296 branches in various parts of the country, and more than a thousand small laboratories functioning in collective farms. The budget of these scientific research institutions amounts to about 51,000,000 roubles a year.*

In addition to this, fifty animal husbandry departments carrying on scientific research work have been organized in universities and other higher educational institutions.

The existence of a close contact between the science and practice of stock-raising gives us the assurance that in the very near future we shall be able to direct at will all the processes of reproduction of the herd of farm animals, as well as the output of the produce of stock-raising. The magnitude of the problem may be appreciated if it is borne in mind that the Soviet State sets itself the aim to provide a supply of the products of stock-raising that will fully meet the requirements of the population.

The scientific agricultural institutions of the Soviet Union have mastered, during the brief period of their work, all that is known to world science in the sphere of animal husbandry.

Nor is this knowledge confined to scientists alone. Tens of thousands of Stakhanovite workers engaged in stock-raising employ scientific methods in their work and display creative ingenuity in their application. As a result, they have succeeded in raising the productivity of native breeds to a level which was formerly considered unattainable.

2. An annual yield of over 3.5 tons of milk per cow ; a progeny of pigs weighing more than 1.5 tons on hoof from one sow ; an average of over 11 pounds of wool per sheep of the merino-Précose, Rambouillet and native merino breeds ; a daily increase in the weight of porkers amounting to 3.5 and even to 4.5 pounds per head ; 165 and more eggs per laying hen a year ; over 265 pounds of honey per beehive ; 100 per cent calving of cows and foaling of mares ; 100 per cent preservation of calves and colts ; 24-26 piglings per sow ; 135 lambs per 100 caracul ewes, 265 lambs per 100 Romanov ewes and more than 140 lambs per 100 merino ewes—such are some of the results obtained by an intelligent application of the achievements of world science in the sphere of animal husbandry.

Soviet achievements in every branch of the stock-raising industry are either on a par with the world records or surpass them. We may mention the record of "Poslushnitsa," a cow producing 16 tons of milk a year (Karavayevo State Farm, Yaroslavl Region) ; or the records of some Soviet race-horses, such as that of "Oulov" which covered 0.99 miles in 2 minutes 3.4 seconds, and 1.98 miles in 4 minutes 20.75 seconds, that of "Pyetushok," a Russian-Ammerican breed, which covered 0.99 mile in 2 minutes 3.5 seconds, that of "Podagra" which covered 1.98 miles in 4 minutes 21.9 seconds, etc.

The breeds of animals are being improved by the method of crossing the native types with pedigreed stock, as well as

with the better local breeds. The State farms and collective farms are thus evolving new breeds insuring an unprecedented productivity.

Soviet science has accomplished a great deal of work in the matter of selecting the breeds that will best serve the purpose of improving the herd in the Soviet Union. At present we have a scientifically elaborated plan for the proper territorial distribution of the various breeds that are used to improve the country's livestock.

3. In order to accelerate the process of improving the stock with the best thoroughbred producers, Soviet science has perfected the technique of artificial fertilization of sheep, cattle, hogs, horses, rabbits, poultry, and even bees. A number of special apparatus have been designed, and the methods of artificial fertilization have been so simplified that every shepherd can apply them. The sperm of one ram is used to fecundate 5,000, and in some instances as many as 10-12,000, ewes in a season ; the sperm of one pedigreed producer serves to fecundate 1,200 mares or 1,000 cows.

Important contributions to the science of artificial fertilization have been made by O. Neuman, V. Milovanov and a number of other prominent scientists.

Over fifty million head of livestock have already been obtained in the U.S.S.R. by the application of the method of artificial fertilization, which makes it possible greatly to speed up the improvement of the herd and the introduction of new breeds. The further perfection of the methods of artificial fertilization will open up still greater possibilities along these lines.

4. Soviet science has also been able to register serious achievements as the result of experiments in cross-breeding with a view to combining the best qualities of a number of

breeds in one new breed. The most noteworthy achievements in this sphere are those of M. Ivanov, member of the Academy of Sciences of the U.S.S.R. He obtained a new breed of sheep—the Askanya Rambouillet—combining the best qualities of the American and native Rambouillet. The Askanya Rambouillet is already superior to the American breed in point of hereditary transmission, wool yield and weight on hoof.

Academician M. Ivanov has also produced a new breed of hog—the large white Askanya—combining the qualities of the native southern Russian variety and those of the large white English breed. The new breed is even somewhat superior in quality to the large white English hog, and at the same time it is better adapted to the conditions of southern Ukraine.

Soviet science has achieved considerable success in elaborating the methods of obtaining new breeds. By applying these methods, livestock expert Filyansky, of the Bolshevik State Farm, has produced a new breed of sheep—the Caucasian Rambouillet. The livestock experts of Kazakhstan have produced a new breed of sheep, the “curducoce,” combining the fleece of the merino with a heavy tallow protuberance (steatopyga) on the rump, which is of great advantage in desert and semi-desert conditions.

5. By applying the Darwinian theory in practice, Soviet breeders have demonstrated the great animal potency of environment and external conditions, in the form of feeding and maintenance, as a means for the transformation of animals. The author, for instance, has succeeded in proving that with proper feeding and good tending the native Kalmyk and Kirghiz cattle display an early maturity which makes these native breeds practically akin to short-horns and Herefords.

At the age of two years and four months, the young that have been brought up according to my method easily reach a weight of 575-615 lbs., of a quality which is on a par with the meat of the best breeds of beef cattle. This method has now been introduced in 79 large State farms.

Soviet science is studying the chemical composition and nutritive qualities of various kinds of feeds produced under various climatic soil and farm conditions. Particular attention is being paid to the mineral ingredients of feeds and fodder. Soviet science is also considering and elaborating the hypothesis of Academician V. Vernadsky to the effect that feeds contain elements of rare soils which apparently play an important role in the nourishment and development of animals, as well as of man.

The contributions of Soviet science in the sphere of animal husbandry include a number of new works dealing with the appraisal of the biological characteristics of feeds. Professor A. Solun has succeeded in establishing the vital importance of the presence of vitamin "A" in feeds for the proper nourishment of animals with young. Feeding mares products with the proper vitamin "A" content safeguards them against miscarriage and insures a strong and enduring progeny. Similar results have been obtained in the case of sheep. Particular success has been obtained in demonstrating the effect of vitamin "A" on the development of the young of the merino sheep.

The study of the biological characteristics of feeds will enable us to make up proper feed rations and thus to solve the problem of proper feed combinations.

This problem, as well as the questions of mineral nourishment, is being successfully dealt with, among others, by the

Zootechnical station in the city of Pushkin, Leningrad Region, working under the direction of Professor M. Dyakov.

By changing the methods of the care of animals and adapting them to the individual peculiarities of the various types of livestock, the Stakhanovites of the livestock industry have succeeded in obtaining considerably higher average rates of productivity and have laid the foundation for a new and higher level of scientific stock-raising.

6. *One of the greatest achievements of Soviet science is its close contact with production. This contact bids fair to bring about exceptional results. Whole districts are at present vying with each other in a spirit of socialist emulation for a higher productivity of stock-raising. The collective farmers of the Ramensky and Lukhovitsky Districts, Moscow Region, have already achieved a milk yield of three tons and more per cow.*

By applying scientific methods, the Soviet stock-raising industry will undoubtedly succeed in the near future in materializing all the vast possibilities offered by stock-raising carried on on a large scale and according to plan.

It must also be pointed out that the State plan for the development of stock-raising, which is drawn up for every year on a strictly scientific basis, is in itself a great achievement.

It was as a result of planning and of the struggle for the fulfilment of the plans that in the five years 1933-1938 the herd of cattle increased in the U.S.S.R. by 64.6 per cent, the number of sheep and goats increased by 104.2 per cent, and that of hogs by 152.9 per cent. In the same years the herd of cattle in Fascist Germany diminished by 659,000 head. The increase in the number of sheep in the Soviet Union in

the one year 1937 alone amounted to 2 times the entire flock of sheep in Germany. The number of sheep in the U.S.S.R. increased in 1937 by 10,700,000 head, whereas the total number of sheep in Germany in 1937 amounted to 4,683,569 head.

Stock-raising in the U.S.S.R. made further strides in 1938. In that year the number of horses in collective farms increased by 8 per cent and that of colts by 9 per cent ; the number of cattle increased by 6 per cent, that of hogs by 7 per cent and that of sheep and goats by 19 per cent.

These are rates of growth which no other country in the world can boast of.

POWERFUL FOOD INDUSTRY

BY

P. S. ZHEMCHUZHINA

1. Largest in the world. 2. National income. 3. Tremendous output. 4. Fisheries. 5. Tea plantations. 6. Surpasses the achievements of the capitalist countries.

1. In the course of the first two Five-Year Plans the Soviet Union built up a powerful food industry equipped with the most up-to-date machinery and designed to meet the most modern technical requirements. The food industry of the Soviet Union ranks with the largest in the world. In 1938 its output amounted to 5.9 times the total output of the food industry of Tsarist Russia in 1913. The Soviet Union now holds first place in the world in the output of sugar, and second place in the output of fish.

Tsarist Russia's output of granulated sugar totalled 1,347,000 tons for the 1913-14 season. In the 1937-38 season the Soviet sugar industry produced 2,700,000 tons of granulated sugar, which represents an increase of 100 per cent as compared with 1913.

The output of the State-controlled vegetable oil industry amounted to 571,000 tons in 1938, as against a total output of 264,000 tons of vegetable oil in 1913, representing an increase of 116 per cent.

The output of canned goods by the State-controlled canning industry, exclusive of co-operative canneries, amount-

ed in 1938 to 1,019,000,000 cans, as against a total of 93,000,000 cans (computed in standard 400 gram, or 14½ ounce, cans) in 1913, representing a nearly 11-fold increase.

The annual output of confectionery goods in Tsarist Russia totalled 70,000 tons. In 1938, the large-scale confectionery industry (excluding the co-operative industry) produced 885,000 tons of confectionery. This represents a 12.6-fold increase.

Practically the entire output of these, as well as of all other food products remains in the country and is consumed by the population of the U.S.S.R.

Tsarist Russia—with her poverty and economic backwardness, with her few industrial centres, the primitive semi-natural economy of her small peasant farms and the low standard of living of the workers and peasants—had no large-scale food industry worth mentioning.

Mechanized plants, such as fish plants, meat-packing plants, large bread factories and large canneries, were unknown in the food industry of old Russia. The manufacture of food products was carried on amid dirt and under bad sanitary conditions. Adulteration of products and cheating of consumers was the general rule.

The food industry was largely represented by handicraft and home production. The latter could successfully compete with the factory products, because, owing to the unemployment prevailing and the semi-slave condition of women, labour cost next to nothing. The majority of the population subsisted on an extremely monotonous diet, and the assortment of food products was a very limited one. Only an insignificant part of the population—the nobility, the urban bourgeoisie and the professionals with high incomes—could afford high-grade

products. The purchasing power of the masses of the people was at an extremely low level.

The labouring people in Tsarist Russia always lived on short commons. The worker's fare was meagre. The overwhelming majority of the peasants were starving. Meat was considered a luxury. Dairy products were considered a rich man's food.

The successes achieved by the Soviet machinery industry in the period of the Stalinist first two Five-Year Plans furnished a basis for building up a powerful food industry. The victory of the collective farm system and the advantages of organized Socialist labour in agriculture insure the mighty development of Socialist agriculture and a constantly growing supply of raw material for the food industry.

The fulfilment of the first two Five-Year Plans brought with it not only a tremendous advance of the national economy and its transformation along Socialist lines, but also a marked improvement in the material conditions and a great rise in the cultural level of the peoples of the U.S.S.R.

2. In 1938 the national income of the country was more than six times as large as in 1925 when it amounted to 16,800,000,000 roubles. Wages have been steadily rising, year after year. During the period of the Second Five-Year Plan alone total wages of workers and office employees in the U.S.S.R. increased 2.5-fold. In 1937 the average yearly wage was more than double that of 1932.

The Socialist countryside has kept pace with the cities in the improvement of its well-being. In the course of four years (from 1934 to 1937) the total income of the collective farmers increased more than 2.7 times, and their cash income increased 4.5 times.

The improvement in the well-being of the people was marked primarily by an improvement in their diet. As compared with 1932, the consumption of butter by workers and office employees in 1937 increased nearly 2.5-fold, that of pork 3.5-fold, that of sausages nearly 4-fold, that of wheat bread nearly three times and that of fruits and berries nearly 4-fold.

By 1937 the per capita consumption of sugar in the Soviet countryside had increased nearly 6.4-fold as compared with 1933, the consumption of confectionery had increased more than three times and that of bacon had more than doubled. As compared with the first half of 1937 the per capita consumption of vegetable oils in the first half of 1938 increased by 82 per cent, that of butter by 32 per cent, that of sugar by 17 per cent and that of soap by 25 per cent.

The data concerning the sales of milk, butter and cheese are also indicative of the tremendous growth of the consumption of food products in the Soviet Union. In 1917 a total of 1,280,900 tons of milk was marketed in Russia; whereas in the Soviet Union in 1938 the milk supply to the market amounted to 5,575,000 tons. The marketable butter supply in Russia in 1913 totalled 120,000 tons; whereas in 1937 in the U.S.S.R. it amounted to 185,200 tons, not taking into account the butter sold in the collective farm markets. The output of cheese grew from 14,200 tons in 1932 to 31,000 tons in 1937.

The improvement in the material well-being of the working people has been accompanied by a steadily growing demand for the products of the food industry among the population. This, in its turn, has given rise to an immense growth of the production capacity of the food industry.

The food industry of the Soviet Union is the principal supplier of food products to the millions of the Soviet urban

population ; while in the case of sugar, tea, confectionery and a number of other products, it supplies them not only to the urban population but to the whole rural population of the Soviet Union as well.

In addition the State-owned food industry supplies the entire population of the Soviet Union with a number of consumer's goods, such as laundry and toilet soap, perfumery, tobacco products, etc.

The demands of the population on the food industry are constantly growing. To meet these demands the various organizations of the food industry are turning out products on a vast scale.

3. Thus the Chief Confectionery Association, which is the largest producer in the field, turned out 687,260 tons of confectionery products in the year 1938.

Out of a total output of 1,019,000,000 cans of goods in 1938, the Chief Canning Industry Association, one of the largest State industrial associations, accounted for 641,600,000 cans.

The Chief Bakery Association, which is the biggest organization in its line in the country, turned out 8,496,000 tons of bread and rolls in 1938.

Bread factories were entirely unknown in Russia in Tsarist times. Bread was then baked in small private bakeries notorious for their filthiness and bad sanitary conditions. At present 75 per cent of the bread produced in the Soviet Union is baked in large mechanized bread factories and bakeries equipped with laboratories in which the flour and other ingredients and materials are subjected to a thorough analysis and a check is kept on the quality of the bread.

The output of fish in the U.S.S.R. is largely concentrated in the People's Commissariat of the Fish Industry. In 1938 the catch accounted for by the four State-controlled organizations of the fish industry and the fishermen's co-operatives, amounted to 1,460,000 tons. In this connection it should be mentioned that the fishermen's co-operatives receive technical and organizational assistance from the State motor fishing stations. By the end of the Third Five-Year Plan period practically all the fishermen's co-operatives in the country were fully provided with the service supplied by these stations.

4. *The application of mechanical devices was entirely unknown to the Russian fisheries in Tsarist times. At present the Soviet trawler fleet in the northern waters alone yields annually 200,000 tons of fish. A large fleet of seiners and drifters has been built up, and fishing by nets has been largely mechanized.*

In 1938 the plants under control of the People's Commissariat of the Food Industry of the U.S.S.R. yielded an output valued at 14,800,000,000 roubles (computed in prices of 1926-27). During the period of the first two Five-Year Plans (1929-37) capital investments in the food industry amounted to 6,900,000,000 roubles. These years witnessed the opening for operation of 21 meat-packing plants, 11 industrialized poultry farms, 5 fish product plants, 91 canneries, 14 sugar refineries, 250 bread factories, 197 mechanized bakeries, 82 creameries, 28 tea factories, 41 fruit and vegetable processing plants, 14 vegetable oil extraction mills, a large number of refrigerating plants, 34 ice cream factories, etc.

The tremendous growth of the output is accompanied by a considerable extension of the variety of food products. Thus, for instance, in recent years natural fruit juices and canned fruit have been placed on the market in large quantities. At

the same time the chilling of fruits and vegetables has been introduced.

In 1938 the confectionery industry turned out 2,678 varieties of confectionery, as against 527 varieties in 1932, at the end of the First Five-Year Plan period. At the same time the confectionery industry strives to supply the urban and rural population with goods of the highest quality. There has also been a marked increase in the output of high quality bakery products.

As a result of the organization of a large-scale meat packing industry, the requirements of the population as regards high-grade meat and sausage are now being covered largely by the output of the meat-packing plants.

Following the example of the American meat-packing industry, the meat-packing plants of the Soviet Union have organised the mass output of semi-prepared and ready-to-serve products. These products have become popular and there is a large demand for them. The reason for this is quite obvious. The radical change in the social conditions of life in the Soviet Union and, particularly, the widespread participation of women in political, economic and social activities, have entailed a considerable reduction in the time spent by women on housework. That is why there is a large demand among the population of the Soviet Union for semi-finished and ready-to-serve products which are a great help to women and lighten their household tasks. In 1938 the meat-packing plants turned out 283,000,000 cutlets, as against a total of 56,600,000 cutlets in 1937. In the same year, 1938, the retail stores of the meat packing plants had on sale over 330,000,000 meat patties and 2,000 tons of meat dumplings. There has also been an increase in the sales of ready weighed and wrapped meat.

5. Tea, the demand for which in Tsarist Russia was entirely covered by imports, is now grown on a large scale in the Soviet Union. The Georgian Soviet Socialist Republic is at present producing thousands of tons of tea annually.

In recent years an entirely new industry has been created —the factory production of ice cream. In 1938 the output of ice cream amounted to 46,800 tons, as against 4,000 tons in 1933 when ice cream was produced by handicraft methods.

Wines are now produced in a larger assortment than ever before. In the past two years a firm beginning has been made to build up a raw material and technical base for the production of champagne. Over 1,100,000 bottles of champagne were placed on the market in 1938. The measures that have been taken to develop wine-growing and the completion of a number of well-equipped plants would enable the wine industry to place 4,000,000 bottles of champagne on the market in 1939.

The growing demand for high-grade food products has been paralleled by an equally increasing demand for perfumery and toilet articles, which is an indication of the greatly improved material conditions and higher cultural standards of the population.

The output of toilet waters increased from 9,400,000 bottles in 1932 to 20,100,000 bottles in 1937. During the same years the output of eau de cologne increased from 9,100,000 bottles to 48,600,000 bottles, and that of perfumes from 10,500,000 bottles to 25,200,000 bottles. The output of face powder increased by 150 per cent over the output in 1932. The output of tooth powder and tooth paste in 1937 amounted in value to 30,000,000 roubles, as against 5,000,000 roubles in 1932 (in 1926-27 prices).

6. *In the course of the first two Five-Year Plan periods the Soviet Union has overtaken, and even surpassed, the most advanced capitalist countries in respect of technology. A powerful machinery industry has been built up. Socialist industries are organized on a large scale—larger than anywhere in the world. In the food industry the handicraft and semi-handicraft shops of old have been replaced by large modern plants well equipped with the most up-to-date machinery and technical appliances.*

The Soviet Union has now set itself the aim of overtaking and surpassing the most highly developed capitalist countries of Europe and the United States of America economically as well. The attainment of this aim would be accompanied by a rise in the productivity of labour, further industrial development and the mastery of new technique. In this connection the Third Five-Year Plan provided for an increase of 50 to 100 per cent in national consumption.

An honourable part in the accomplishment of this task has been assigned to the food industry which is called upon to satisfy the demand of the working people of the land of Socialism for wholesome and high-grade food products.

PART IV

ALL-ROUND CONTRIBUTION TO
INDUSTRIALISATION AND
GENERAL UPLIFT

CULTURAL REVOLUTION

THE NEW SOVIET INTELLIGENTSIA

By

JOSEPH STALIN

The steady progress of industry and agriculture could not but lead, and has actually led, to a new rise in the material and cultural standard of the people.

The abolition of exploitation and the consolidation of the Socialist economic system, the absence of unemployment, with its attendant poverty, in town and country, the enormous expansion of industry and the steady growth in the number of workers, the increase in the productivity of labour of the workers and collective farmers, the securing of the land to the collective farms in perpetuity, and the vast number of first-class tractors and agricultural machines supplied to the collective farms—all this has created effective conditions for a further rise in the standard of living of the workers and peasants. In its turn, the improvement in the standard of living of the workers and peasants has naturally led to an improvement in the standard of living of the intelligentsia, who represent a considerable force in our country and serve the interests of the workers and the peasants.

Now it is no longer a question of finding room in industry for unemployed and homeless peasants who have been set adrift from their villages and live in fear of starvation—of giving them jobs out of charity. The time has long gone by when there were such peasants in our country. And this is a good thing, of course, for it testifies to the prosperity of our countryside. If anything, it is now a question of asking the collective farms to comply with our request and to release, say, one and a half million young collective farmers annually for the needs of our expanding industry.

The collective farms, which have already become prosperous, should bear in mind that if we do not get this assistance from them it will be very difficult to continue the expansion of our industry, and that if we do not expand our industry we will not be able to satisfy the peasants' growing demand for consumers' goods. The collective farms are quite able to meet this request of ours, since the abundance of machinery in the collective farms releases a portion of the rural workers, who, if transferred to industry, could be of immense service to our whole national economy.

As a result, we have the following indications of the improvement in the standard of living of the workers and peasants during the period under review.

TELL-TALE FIGURES

1. *The national income rose from 48,500,000,000 roubles in 1933 to 105,000,000,000 roubles in 1938 ;*

2. *The number of workers and other employees rose from a little over 22,000,000 in 1933 to 28,000,000 in 1938 ;*

3. *The total annual payroll of workers and other employees rose from 34,953,000,000 roubles to 96,425,000,000 roubles ;*

4. *The average annual wages of industrial workers, which amounted to 1,513 roubles in 1933, rose to 3,447 roubles in 1938 ;*

5. *The total monetary incomes of the collective farms rose from 5,661,900,000 roubles in 1933 to 14,180,100,000 roubles in 1937 ;*

6. *The average amount of grain received per collective farm household in the grain-growing regions rose from 61 poods in 1933 to 144 poods in 1937, exclusive of seed, emergency seed stocks, fodder for the collectively-owned cattle, grain deliveries, and payments in kind for work performed by the machine and tractor stations ;*

7. *State budget appropriations for social and cultural services rose from 5,839,900,000 roubles in 1933 to 35,202,500,000 roubles in 1938.*

As regards the cultural standard of the people, its rise was commensurate with the rise in the standard of living.

From the standpoint of the cultural development of the people, the period under review has been marked by a veritable cultural revolution. The introduction of universal compulsory elementary education in the languages of the various nations of the U.S.S.R., an increasing number of schools and scholars of all grades, an increasing number of college-trained experts, and the creation and growth of a new intelligentsia, a Soviet intelligentsia—such is the general picture of the cultural advancement of our people.

(1) RISE IN THE CULTURAL LEVEL OF THE PEOPLE

Here are the figures :—

	Unit of measure- ment thousands	1933-34	1938-39	Increas
Number of pupils and students of all grades		23,814	33,965.4	142.6%
Of which:				
In elementary schools	"	17,873.5	21,288.4	119.1%
In intermediate schools (general and special)	"	5,482.2	12,076.0	220.3%
In higher educational institutions ..	"	458.3	601.0	131.1%
Number of persons en- gaged in all forms of study in the U.S.S.R.	"	—	47,442.1	—
Number of public libra- ries ..	"	40.3	70.0	173.7%
Number of books in public libraries ..	millions	86.0	126.6	147.2%
Number of clubs ..	thousands	61.1	95.6	156.5%
Number of theatres	units	587	790	134.6%
Number of cinema ins- tallations (excluding narrow-film) ..	"	27,467	30,461	110.9%
Of which:				
With sound equipment	"	498	15,202	31 times
Number of cinema ins- tallations (excluding narrow-film) in rural districts ..	"	17,470	18,991	108.7%
Of which:				
With sound equipment	"	24	6,670	278 times
Annual newspaper cir- culation ..	millions	4,984.6	7,092.4	142.3%

(2) NUMBER OF SCHOOLS BUILT IN THE U.S.S.R.
IN 1933-38

	In towns and hamlets	In rural localities	Total
1933 ..	326	3,261	3,587
1934 ..	577	3,488	4,065
1935 ...	533	2,829	3,362
1936 ..	1,505	4,206	5,711
1937 ..	730	1,323	2,053
1938 ..	583	1,246	1,829
Total (1933-38)	4,254	16,353	20,607

(3) YOUNG SPECIALISTS GRADUATED FROM HIGHER
EDUCATIONAL INSTITUTIONS IN 1933-38

(In thousands)

	1933	1934	1935	1936	1937	1938
Total for U.S.S.R. (exclusive of military specialists) ..	34.6	49.2	83.7	97.6	104.8	106.7
1. Engineers for industry and building ..	6.1	14.9	29.6	29.2	27.6	25.2
2. Engineers for transport and communications ..	1.8	4.0	7.6	6.6	7.0	6.1
3. Agricultural engineers, agron- omists, veterinarians and zoo-technicians ..	4.8	6.3	8.8	10.4	11.3	10.6
4. Economists and jurists ..	2.5	2.5	5.0	6.4	5.0	5.7
5. Teachers of intermediate schools, workers' faculties technical schools, and other educational workers, includ- ing art workers, ..	10.5	7.9	12.5	21.6	31.7	35.7
6. Physicians, pharmacists, and physical culture instructors	4.6	2.5	7.5	9.2	12.3	13.6
7. Other specialities ..	4.3	11.1	12.7	14.2	9.0	9.8

NEW SOVIET INTELLIGENTSIA

As a result of this immense cultural work a numerous new, Soviet intelligentsia has arisen in our country, an intelligentsia which has emerged from the ranks of the working class, peasantry and Soviet employees, which is of the flesh and blood of our people, which has never known the yoke of exploitation, which hates exploiters, and which is ready to serve the peoples of the U.S.S.R. faithfully, and devotedly.

I think that the rise of this new, Socialist intelligentsia of the people is one of the most important results of the cultural revolution in our country.

*(Extracts of the speech delivered to the 18th
Congress of the C.P.S.U.)*

END OF OPPRESSION

NATIONAL QUESTION SOLVED

By

CHIMNAZ ASLANOVA

1. Several Nationalities. 2. Sowing discord. 3. End of oppression. 4. Declaration of Rights. 5. Shook the world. 6. Economic change. 7. When women had no rights. 8. Education. 9. Equality.

1. The U.S.S.R. is a country of many nationalities. Its vast territory, stretching from the Arctic tundras to the subtropics, is inhabited by scores of different peoples: Russians, Ukrainians, Byelorussians, Uzbeks, Georgians, Kazakhs, Azerbaijanians, Turkmenians, Yakuts, Buryats, Tajiks, Jews, Poles, Nentci, Ossetians, Lezghins, Greeks, Tatars, Kalmyks, Chukchi, Yukaghirs, Aleuts and numerous others.

Want and destitution was the lot of these nationalities in the past. Theirs was a life of endless misery left in the wake of frequent bloody tragedies which took their toll of thousands—and sometimes millions—of human lives. *Lenin called Tsarist Russia "a prison of nations."*

Prior to the Great October Socialist Revolution only the Russians were considered the indigenous population of the country. All other nationalities were termed "aliens." But even of the Russians only a small minority enjoyed a privileged position. The overwhelming majority of the Russian people

—the workers and peasants—were denied political rights and bore the yoke of economic oppression.

The peoples of the Far North were the victims of the traders, who would come to their habitations and exchange a sewing needle for a deer, or a bottle of vodka or a brick of pressed tea for the skin of a sable. The Chukchi would be tricked into exchanging a beaver skin for a bottle of vodka treated with makhorka and blue vitriol to give it an extra kick. In the Northern Urals traders would wheedle out a couple of the exceedingly valuable blue fox skins in exchange for an axe.

The mountaineers of the Caucasus—after having for many decades waged an unequal war for their freedom—abandoned their auls (villages), orchards and pastures and retreated high into the mountains, preferring to lead a life of semi-starvation in the recesses of the naked ridges rather than to submit to slavery. Many Kirghiz, Tajiks and other inhabitants of the mountainous districts of Central Asia likewise left their fertile land and pastures in the valleys and retreated into the mountains.

Many a time did the peoples of the Caucasus and Central Asia suffer cruel and bloody defeat in their fight for their national independence; but defeat could not stifle their love for liberty, and Tsarist Russia was always rife with insurrections and rebellions of the oppressed peoples.

2. The Tsarist Government tried to paralyze the resistance of the subjugated peoples and to maintain its own rule by sowing hatred and discord among the various nationalities and inciting one nation against another: Russians against Jews. Armenians against Azerbaijanians, the Turkmenian tribes against one another, etc.

Anti-Jewish programs and massacres of other nationalities were quite frequent in Tsarist Russia. In the Caucasus a whole town, Shusha, was razed to the ground and most of its inhabitants—about 20,000 people—slaughtered as the result of a bloody massacre instigated by the Tsarist Government authorities.

The Tsarist Government resorted to programs and incitement of national hatred most often as a means of stemming the rising tide of the revolutionary movement in the country. By these means the Tsarist officials tried to divert the anger of the people from the autocracy, to blame one nationality for the misery and destitution of another, to head off the struggle of the working people against the Tsar's arbitrary rule.

Jews, Azerbaijanians, Uzbeks and people of many other nationalities were not allowed to hold Government positions. The Tsarist Government was particularly ruthless in its policy of hate with regard to the Jews.

The numerous people inhabiting the territory of the former Russian Empire endured the double yoke of the Tsarist Government and of their own landlords, feudal princes, priests, and merchants.

The policy of the Tsarist Government was to keep the enslaved peoples of its colonies in a state of ignorance and darkness. In pre-revolutionary Kirghizia only one out of two hundred could read and write. There was not a single university or college in Kazakhstan, Kirghizia, Armenia and other colonies of Tsar's Government. The number of elementary schools could be counted on one's fingers. Instruction in the native languages was forbidden. No literature was published in the languages of the oppress-

ed colonial peoples. The creative genius of the non-Russian nationalities was suppressed. The treasures of folk art, the products of the age-old national cultures of the Ukrainian, Georgian, Armenian, Kirghiz and other peoples, were buried in oblivion. In Georgia people were persecuted for singing popular folksongs. The Ukrainians were not permitted to have their own theatre. Scores of peoples of old Russia even had no alphabet of their own.

3. The Great October Socialist Revolution, which transformed the former Russian Empire into a free democratic State, into the fatherland of all labouring people, put an end to national oppression. The October Revolution emancipated all the peoples of Russia, and they have since become the masters of their own destinies.

4. A few days after the victorious October Revolution, on November 15, 1917, the "Declaration of Rights of the Peoples of Russia," a document of the greatest historic significance, was signed by Lenin and Stalin, the leaders of the Revolution.

This document announced the principles of the national policy of the Soviet Government :

1. Equality and sovereignty of the peoples of Russia.

2. The right of the peoples of Russia to free self-determination, including the right to secede and form an independent state.

3. The abolition of all national and national-religious privileges and restrictions whatsoever.

4. Free development for the national minorities and ethnographic groups inhabiting the territory of Russia.

The Declaration of Rights of the Peoples of Russia pointed out to the labouring masses of the various nationalities the only way to their emancipation—the brotherly union of peoples, their common struggle against the rule of the bourgeoisie—for their independence and freedom.

The Russian workers and peasants, fighting in close unity with the working people of all the nationalities of the Soviet Republics, defended their State independence and routed the internal counter-revolutionary forces and the foreign interventionists. This historic victory of the Soviet power welded the working people of the various nationalities into a mighty force.

In 1922, soon after the end of the Civil War and the defeat of the foreign interventionists, the first All-Union Congress of Soviets was convened in Moscow. This Congress decided unanimously to form the declaration adopted by the Congress stressed the voluntary nature of the union of all the Soviet Republics, each of which reserved the right freely to secede from the Union.

The amalgamation of the several Soviet Republics into a single Union was dictated, on the one hand, by the problems of economic restoration following the havoc wrought by the war, and, on the other hand, by the instability of the international situation and the danger of new attacks, which necessitated the formation of a common front of all the Soviet Republics in the face of the capitalist world surrounding them.

The Great Socialist October Revolution abolished all national privileges and restrictions. But there still remained the heritage of the past—the actual inequality of the various peoples as a result of the deliberate policy of the Tsarist

Government to maintain a different level of economic and cultural développement for the different nationalities. When the Soviet Republic was formed, the Party of Lenin and Stalin at once set out to do away with this inequality.

The working class of the great Russian people and the splendid Russian culture with centuries of development behind it came to the assistance of the nationalities which had remained backward in their economic and cultural development. Russian culture has exercised an enormous and beneficent influence upon the culture of all the peoples of the U.S.S.R.

5. *With the abolition of political inequality and of the exploitation of man by man the causes for national enmity have also been removed.*

Suleiman Stalsky, the famous people's poet of Daghestan, once said : " The Bolshevik upheaval, which shook the whole world, has shaken up our old mode of life as well. Our vast plains have been lighted up by the bright and eternal fire of the Great October Revolution." The light of this revolutionary fire has penetrated to the mountain fastnesses of the Caucasus as well as to the deserts of Central Asia, to the Far Eastern taiga as well as to the tundras of the Far North.

There are peoples in the Soviet Union that have in two decades made a leap from medieval backwardness to twentieth century conditions. Modern culture has penetrated to the most remote and inaccessible auls whither the " natives " once withdrew in order not to submit to the Tsarist colonizers.

All the national republics have been progressing at a tempestuous rate. Their mineral wealth no longer lies idle in the bowels of the earth. Each year brings with it disco-

series of new deposits of gold, zinc, coal, manganese, oil, tin, iron, lead, sulphur, etc. Over the landscape rise the derricks of newly-sunk mines and the smokestacks of recently-built factories. Powerful industries have sprung up in the various national republics. Coal, copper and lead in Kazakhstan, manganese ore in Transcaucasia, coal in Kirghizia, zinc in North Ossetia in the Caucasus, oil in Checheno-Ingushetia and along the southern slopes of the Urals in Bashkiria—all these mineral resources have become the basis for the industrial development of the respective republics.

In the past, the coal, copper and lead resources of Kazakhstan were left practically untouched. There was even no railway there before the Revolution. The first railroad to traverse Kazakhstan was the Turksib, built in 1928-32. It connects Turkestan with Siberia and has brought to life vast stretches of semi-desert land.

A marvellous transformation has been wrought in the economic life of Uzbekistan. Here a number of huge textile mills have been built, and a powerful and complex irrigation system has brought about an unprecedented development of cotton growing.

Azerbaijan had only one industrial centre in the past—Baku, famous for its oil fields. But the Baku oil resources were exploited in a wasteful manner. The oil kings reaped enormous profits, while the whole country and the population of Azerbaijan lingered in poverty. At present many new industries are developing in Azerbaijan, while the output of oil has increased more than threefold.

6. Every one of the eleven republics comprising the U.S.S.R. has been undergoing a profound economic change and development. The railway stations of the Ukraine alone

now handle more freight in a year than all the railway stations of Tsarist Russia in 1913.

More freight and mail is carried by airplanes in Transcaucasia, Central Asia and Kazakhstan than in Germany, Great Britain and France combined.

Industrial progress in the national republics has been accompanied by an intensive development of agriculture. Collective farming has transformed the old auls and kishlaks. Modern scientific methods of cultivation and stockraising have been introduced where formerly primitive nomadic economy prevailed. Hundreds of thousands of tractors, harvester combines and other machines are used on the fields of the collective farms and State farms. Mountainous regions and boundless steppes where formerly only the wooden plough and mattock were known have now been provided with modern implements and machines for efficient farming. 88,000 tractors and 27,000 harvester combines are in use on the fields of the Ukraine. The collective farms and State farms of Byelorussia dispose of 8,100 tractors, 4,000 threshing machines, 4,000 trucks, 1,200 flax-pulling machines. The valleys and plateaus of Kirghizia are cultivated with the help of 3,964 tractors. There are 6,885 tractors and 2,871 harvester combines in Tataria, 5,562 tractors in Azerbaijan, etc.

New crops have appeared in the national republics. Rice growing has been introduced in the Ukraine. In Transcaucasia, tea is grown on an extensive scale, and large citrus fruit groves have been planted. The breeds of cattle have improved. Among sheep the fine wool varieties are becoming prevalent.

The growth of industry and agriculture has created a large demand for workers proficient in various trades and

professions which were formerly unknown in some of the national republics. Among the native Kazakh population, for instance, there were formerly no smiths even, not to speak of engineers, agronomists or physicians. Today Kazakhstan has its own native increase in the number of professional people and the variety of professions among the people of the remote sections of the Caucasus, Central Asia, the Far North.

7. One of the manifestations of the former cultural backwardness of some of these peoples was the tenacity with which the survivals of tribal feudal customs persisted among them, particularly with respect to women. When a girl was ready to be married she was traded off to the highest bidder. Her consent was never asked. She went to the man who offered the highest "ransom." Women were frequently abducted. Their homes were prisons to them. No strange man was allowed to see the face of a woman who did not belong to him. Women had to wear veils ("chadra" among the Azerbaijanians) or nets made of horse-hair ("chav-chan" among the Tajiks and Uzbeks). The vendetta existed among the mountaineers of the Caucasus, and blood feuds between families were kept up for generations.

Among most of the Eastern peoples women enjoyed no rights whatsoever. Woman was looked down upon. She was the docile slave of her husband, father or brother. The Lezgins of Daghestan used to express contempt with the words: "If you can't do that you are nothing but a woman." In Azerbaijan men would say to women: "Don't mix into men's affairs with your dough-covered hands."

Only Soviet power brought the women emancipation. The Soviet laws protect the rights of women, which are in every respect the same as those of men. Under the beneficent

rays of the Soviet national policy thousands of women in the East have developed and become statesmen, doctors, engineers, fliers, teachers, agricultural experts, etc.

The Soviet Government has from the very outset devoted great attention to the development of national culture and public education in the border regions of the former Russian Empire.

8. Universal free elementary education is enforced in the national republics just as it is throughout the Soviet Union. The number of children attending school has increased 35 times in Azerbaijan, 37 times in Turkmenia, 53 times in Uzbekistan, 48 times in Kazakhstan, 68 times in Armenia, 172 times in Kirghizia.

In 1936 children in the U.S.S.R. were taught in school in 112 languages, many of which had no alphabet of their own before the Revolution.

The few universities and scientific institutes that existed in Tsarist times were all Russian. There were many nationalities that knew nothing about them. At present there are 22 institutions of higher learning in Byelorussia, 13 in Azerbaijan, 19 in Kazakhstan. The number of universities and scientific institutes in the Ukraine has grown from 15 to 139. *The Ukraine today has more institutions of higher learning than Germany, although the population of the latter is twice as large as that of the former.* The universities and other institutions of higher learning of the Russian Soviet Federative Socialist Republic alone are attended by more than three times as many students as there are in Great Britain, Germany and Italy combined.

The national policy of the Soviet Government has stimulated the development of creative talent and has opened up

the spring-wells of national art. It has revived the creative forces of the peoples. The works of the great writers of the Ukraine, Georgia, Armenia and other republics have become the property of the entire Soviet nation. The rich heritage of the culture of the various nationalities has been made accessible to the Russian people and to all the other peoples of the Soviet Union. The Ukrainian poet Taras Shevchenko, the Georgian poet Shot' ha Rust'hveli, the Kirghizian epos are now read by millions in the Soviet Union.

On the other hand, Russian and world culture has become accessible to all the nationalities inhabiting the U.S.S.R., exercising a tremendous influence on the development of their national culture. Pushkin and Darwin, Shakespeare and Cervantes, Tolstoy and Marx have been translated into dozens of languages of the Soviet peoples.

9. All the nations and races of the U.S.S.R., irrespective of their past or present condition, and irrespective of their numbers, enjoy fully equal rights in all spheres of economic, public, political and cultural activity.

Article 123 of the Constitution of the U.S.S.R. states :

"Equality of rights of citizens of the U.S.S.R., irrespective of their nationality or race, in all spheres of economic, state, cultural, social and political life, is an indefeasible law.

"Any direct or indirect restriction of the rights of, or, conversely, any establishment of direct or indirect privileges for, citizens on account of their race or nationality, as well as any advocacy of racial or national exclusiveness or hatred and contempt, is punishable by law."

All the eleven Union Republics enjoy equal rights in absolutely every respect. Each of these constituent republics

has its own constitution, which takes into account the specific features of the republic and is drawn up in full conformity with the Constitution of the U.S.S.R. To every Union Republic is reserved the right freely to secede from the U.S.S.R. The territories of the Union Republics cannot be altered without their consent.

The highest organ of State authority in the U.S.S.R. is the Supreme Soviet of the U.S.S.R., which consists of two Chambers enjoying equal rights—the Soviet of the Union and the Soviet of Nationalities.

Each Union Republic, irrespective of the size of its population, elects 25 deputies to the Soviet of Nationalities ; each autonomous region five deputies, and each national area one deputy. Thus the Azerbaijan Soviet Socialist Republic, with a population of slightly over three million, and the Ukrainian Soviet Socialist Republic, with a population of over thirty million, each send the same number of deputies to the Soviet of Nationalities. This places all the constituent republics, irrespective of the size of their population, on an equal footing, and enables each of them to fully defend its specific interests in the Soviet of Nationalities.

Such, in brief, are the main features of the policy which has led to the solution of the national problem in the Soviet Union. We may sum up in the words of J. V. Stalin, the author of the Constitution of the U.S.S.R.:

“ . . . the absence of exploiting classes, which are the principal organizers of strife between nations ; the absence of exploitation, which cultivates mutual distrust and kindles nationalist passions ; the fact that power is in the hands of the working class, which is an enemy of all enslavement and the true vehicle of the ideas of inter-

nationalism ; the actual practice of mutual aid among the peoples in all spheres of economic and social life ; and, finally, the flourishing national culture of the peoples of the U.S.S.R., culture which is national in form and Socialist in content—all these and similar factors have brought about a radical change in the aspect of the peoples of the U.S.S.R. ; their feeling of mutual distrust has disappeared, a feeling of mutual friendship has developed among them, and thus, real fraternal co-operation between the peoples has been established within the system of a single federated state.

“ As a result, we now have a fully formed multinational Socialist State, which has stood all tests, and the stability of which might well be envied by any national state in any part of the world.”

To Soviet people, the amity of nations is the most sacred and most indispensable condition for the further success of Socialism. The most gifted artists and writers devote their works to the idea of internationalism and the brotherhood of peoples in the Soviet Union. These works reflect the thoughts and sentiments of the millions.

The Dungans, a people inhabiting the approaches to the central range of the Tian-Shan Mountains in Central Asia, have a fine saying expressing the idea of the fraternal friendship of the peoples :

“ The bonfire will burn brighter if all the twigs are put together.”

PLANNING SCIENCE

BY

A. BACH

1. Electrification of the country. 2. Big sum for research.
3. Science—industry link. 4. 902 institutes. 5. Factory laboratories. 6. Overtaking capitalist countries. 7. Theory and practice interrelated. 8. Rise in cultural level. 9. The red letter day.

In Socialist economy, which is based on the application of the latest technique and makes use of the vast experience accumulated by man, science and scientists hold a high place. The Civil War and foreign intervention were still in progress when the young Soviet Republic, beset by enemies on all sides and in dire need of the bare necessities of life, established an extensive system of scientific research institutes, at the same time making every effort to improve the working and living conditions of those engaged in scientific work. Even in this early period Soviet scientists were widely enlisted in the work of drafting a plan for the development of the national economy, since only science could serve as the foundation of such an undertaking.

It was in 1919 and 1920 that, with the collaboration of two hundred scientists and engineers representing the most diverse departments of human knowledge, and on Lenin's and Stalin's initiative, the celebrated plan for the electrification of Russia was drawn up.

This plan, which at first encountered many a sceptical jeer, was put into execution and completed much earlier than the time originally specified. The former Imperial Academy of Sciences was singled out for particular attention by the Soviet Government, although the majority of its members were at first far from sympathetic to the Socialist October Revolution.

The great Russian writer, Maxim Gorky, initiated the formation of a Government committee to ease the life of men of science. In the most difficulty years of the young Soviet Republic, this committee managed to have sanatoriums and rest homes set aside for scientific workers, secured various allowances for them, and aided them in procuring foreign literature and apparatus for the pursuit of their scientific labours.

In 1925, when the Academy of Sciences of the U.S.S.R., as it was now styled, celebrated its bicentennial, the Soviet Government invited numerous foreign savants for the occasion. The whole tenor of the festivities held under Government auspices was ample proof of the paramount importance attached by it to science as a factor in the building of Socialist society.

Science has made great strides in the U.S.S.R. during the twenty-one years of the latter's existence. Objective proof of this statement is the fact that in 1938 there were no less than 902 scientific research institutes in the country, with a total staff of 29,246 scientific workers. These figures are exclusive of factory and collective-farm laboratories and their personnel, and of the observatories in the Arctic, which come under the jurisdiction of the Chief Northern Sea Route Administration. *In January (1938) the grand total of all scientific workers in the U.S.S.R. was eighty thousand.*

Academy of Sciences :

The following tables illustrates the expansion of the Academy of Sciences :

	1917	1938
Institutes of the Academy	1	58
Members of the Academy	45	130
Scientific workers	109	3,420
Appropriation (roubles)	1,500,000	127,000,000

2. *In 1938, Soviet budgetary appropriations for scientific research work aggregated 1,016,000,000 roubles.*

As to higher education, statistics show that in all Russia before the Revolution there were only 91 universities and colleges, with a total enrollment of 112,000 students, primarily scions of the nobility, the landlords and the bourgeoisie, while today the corresponding figure are 716 and 601,000 with a student body consisting of the sons and daughters of workers, peasants and members of the intelligentsia.

These figures alone suffice to demonstrate the close tie between Soviet science and the people. But to these mere numbers of scientific workers and students, true sons of the people, is to be added the all-important fact *that in U.S.S.R. the achievements of science do not become a source of enrichment of only a small group of persons, to the detriment of the vast majority of the population, but accrue to the benefit of the whole community.* This distinguishing feature of Soviet science has asserted itself from the very inception of Soviet power.

We have already made mention of the enlistment of men of science in the work of drawing up the country's electrification plan. The subsequent Five-Year Plans for the national-economic development of the U.S.S.R., which have

acquired world renown, were also based strictly on scientific principles.

The execution of these plans required a considerable increase in the utilization of the country's natural resources. It is a well-known fact that in Tsarist Russia, which possessed enormous mineral wealth, these natural resources were explored and surveyed only to a very small extent. In this field, as well as in the prospecting for, discovery and surveying of other raw material and primary power sources, Soviet science played an extremely important part. During the last twenty years Soviet scientists have penetrated into the most distant parts of the country and have multiplied the known natural resources of the country several times over. The more detailed study of this wealth proceeds parallel with its application in industry. Thus, for instance, in 1920, immediately after the forces of intervention were driven out of the northern regions of the Soviet Union, commenced the prospecting for the rich mineral deposits of the Khibini mountains and the detailed study of these minerals. Geological surveys and tests covered a period of several years. As early as 1929 big chemical plants designed to manufacture mineral fertilizers and other chemicals began to be constructed at the sites of the newly discovered deposits.

3. *This clearly illustrates how closely science and industry are associated in the U.S.S.R. Under the Tsar science shied at any direct contact with the country's economic life, and therefore developed like a hothouse plant. In consequence, none of the great discoveries of Russian science found any practical application.*

In 1842, for instance, Prof. Zinin of Kazan, a celebrated chemist, worked out a method for the mass production of

aniline on which the development of the aniline dye industry and the manufacture of aniline pharmaceutical products was based in other capitalist countries, while in Russia itself Zinin's discovery was not put to any practical use.

Under the Soviet Government such a state of affairs is impossible, for in the U.S.S.R. all scientific work is conducted in such a way that it is of direct benefit to Socialist construction.

4. *The country's 902 scientific institutes are divided into two categories : governing and departmental.*

The first category comprises the institutes of the Academy of Sciences, the best institutes of the several People's Commissariats engaged in theoretical research, and, some of the institutes forming part of the big research centers under the Council of People's Commissars of the U.S.S.R., as, for instance, the Lenin All-Union Academy of Agricultural Sciences and the Gorky Institute of Experimental Medicine.

The second category consists of the institutes attached to the various branches of industry and agriculture under the respective People's Commissariats.

The governing institutes engage primarily in the theoretical investigation of key problems which concern the national economy as a whole. These investigations shed light on the course of development of the productive forces of our country and make it possible to place production process on a scientific basis, to govern these processes.

Scientific facts, established in this process, which it is deemed advisable to elaborate by technological research are sent on to the departmental institute engaged in the specific

line in question for further investigation under the supervision of or in constant consultation with governing institute. If there is no corresponding departmental institute, the governing institute itself works out this particular question.

The prime function of the departmental institutes is to render scientific and technical service to the branches of industry and agriculture to which they are attached. These institutes are charged with finding laboratory solutions for problems that arise in the routine of factory production, to seek to improve the technological processes in use and to work out new processes. In cases where it is necessary to make a thorough theoretical investigation beyond the capacity of the departmental institute, it applies for assistance to the governing institute with which it is associated.

The functions of the departmental institutes also include the rendering of assistance to factory laboratories and the exercise of some measure of control over their work.

5. The factory laboratories exercise control over production from the angle of technique, and do the research work incident to any specific scientific problem the factory must solve. These laboratories thus become a vital force in the work of their respective factories, and represent the primary research cells in the general system of scientific research.

In organizing the research work necessary for the building of Socialism, the Soviet Government applies the rule that scientific workers are to be given every encouragement to use their own initiative.

The annual plans drawn up by the director and the scientific collaborators of each institute specify the theoretical and practical work to be performed by each research worker

and stipulate the time allowed. These plans are preliminarily discussed at meetings of the various sectors concerned and at the Scientific Council, and are then taken up and acted on at a general meeting of the whole staff of the institute. However, it is the director who is primarily responsible for the execution of the plan as finally adopted.

When the idea of planning science was first proposed, it was received with some misgivings. In doing research work, you proceed from the known to the unknown, you seek and create what is new. Hence the question arose : how can discoveries as yet unknown, but contemplated for the future, be planned for a year ahead, with a fixed calendar prescribing execution ?

The explanation lies in the fact that all research is a quest for the solution of definite problems by means of experimental operations. The annual plan specifies the series of operations which the investigator expects to yield the solution sought. The investigator does not undertake to obtain within a given time a complete solution of the problem he is dealing with ; he undertakes merely to perform certain specified experimental operations in accordance with a definite time schedule. Of course, no experienced investigator has any difficulty in calculating the time required for these operations.

The question of planning science no longer causes perplexity. Many who feared that planning would jeopardize the creative faculty of scientists are now convinced that it is precisely due to planning that in the U.S.S.R. theoretical and practical research, including also scientific research, has reached a state of real florescence.

The plans worked out by the various institutes are sub-

mitted to the respective People's Commissariats, where they are co-ordinated on a national scale. This eliminates duplication of work, with the needless waste of energy and funds it would entail. After receiving the approval of the People's Commissariats, the plans are passed on to the *State Planning Commission*, where they are put in final shape ; then they are submitted to the Council of People's Commissars of the U.S.S.R. for approval.

The present plans of the Soviet Union's scientific institutions, particularly those of the Academy of Sciences of the U.S.S.R., conformed with the requirements of the Third Five-year Plan for the national-economic development of the Soviet Union (Bolsheviks). This third quinquennial plan was thoroughly discussed in all its details and was approved at the Eighteenth Congress of the Communist Party of the Soviet Union (Bolsheviks) held in March 1939.

6. This Congress laid it down as the fundamental task of the Soviet Union to overtake and surpass the advanced capitalist countries also economically, i.e., in per capita production. The accomplishment of this task provides all scientific institutions of the country with work rich and live in content. For this plan provides for a colossal increase of production in all branches of the national economy. This increase, however, can only be secured by further prospecting for and studying the country's mineral wealth, by distributing industry, agriculture and transportation highways in a manner that will yield the best economic results, by constructing still more factories and mills, by further improving the technological processes of production, etc. Hence, what is required here is concerted effort by economists, geologists, builders, technicians, and members of all other scientific professions to promote the common cause.

But it would be a mistake to think that, in setting itself practical aims, science in the U.S.S.R. neglects the solution of theoretical problems. Quite the contrary is true. *Soviet scientists strive for a happy combination of theory and practice and for their interaction.* Moreover, it often happens that the solution of practical problems must abide the solution of related theoretical problems. For example, the Soviet Union has constructed on the Volga the most powerful hydro-electric power stations in the world, while in Moscow the world's tallest structure, the Palace of Soviets, is already being built. In operations of such gigantic proportions the approximate calculations hitherto employed in construction engineering must yield to new and more precise equations, which it is imperative to work out. Regarded in this light, higher mathematics, often considered an "abstract" science, becomes supremely practical. Such examples could easily be multiplied.

Take, for instance, the study of the physical laws of the electron. The introduction of automatic and remote control in industry is largely dependent on theoretical investigation in this field. But there are also other theoretical themes engrossing the attention of Soviet science which do not yield direct practical results, and will not do so in the near future, such as the physics of the atomic nucleus.

On the other hand, scientists obtain a mass of valuable data from practical experience gained in factories, on construction projects, etc. This material is very valuable in making generalizations of grave import.

7. Thus, in the work of Soviet research institutes, questions of theory and practice are closely interrelated. This is another intrinsic feature of Soviet science.

The industrial expansion of the U.S.S.R. is attended by rapid progress in every field of knowledge and culture.

Archeology will serve to illustrate the point. In connection with the extensive building and reconstruction of new industrial plants and of entire cities, of hydro-electric power stations and canals, the institutes devoted to this science have been commissioned by the Soviet Government to make such archeological excavations as may be called for and to do so before the building operations are begun. For it is plain that after a construction project is completed, or even under way, its site should be closed to archeological research, particularly in the case of localities scheduled to be submerged beneath the waters of hydro-electric power reservoirs. Excavation for archeological purposes, for which great sums are appropriated by the Soviet Government, was extensively carried on in the zone of construction of the Dnieper hydro-electric development, the White Sea-Baltic Canal, the Moscow-Volga Canal, and the Moscow subway, among many others. These excavations brought to light much valuable material descriptive of the remote past of the territory now covered by the Soviet Union. Today more than two hundred finds of paleoliths have been listed within the confines of the U.S.S.R. while before the Revolution the number registered was not over twenty.

Soviet science devotes much attention to the elaboration of the humanities.

8. The general rise in the cultural level of the country has greatly contributed to the success achieved in this sphere, too. There is great popular interest in the work of the various special institutes engaged in the study of philosophy, history, ethnography and linguistics. All sections of the population eagerly follow their progress.

Soviet citizens study the history of their country with great attention and strive to fully comprehend the laws of social development. Large editions of works on philosophy or history are often sold out in one day. Such books are bought not only by students, teachers, and other brain workers but also by manual workers and collective farmers.

The Academy of Sciences of the U.S.S.R. has in preparation a number of publications of capital importance. These publications, each of which consists of many volumes, deal with general history, the history of the peoples of the U.S.S.R. and their ethnography, the history of world literature and of Russian literature, of philosophy, etc. These volumes, which will give the reader a general summary of the achievements of Soviet science during the last twenty years, meet the great demand for such works from every section of the Soviet people.

Close connection with the people, service to the people, and elaboration of purely scientific problems side by side with direct aid in accomplishing the tasks of Socialist construction—these are the characteristics of Soviet science, the features that account for its general popularity.

The planning of scientific work in accordance with the general tasks that face the country is excellent training for those engaged in the various fields of science, and accustoms them to feel that they are a vital and active part of one integral whole.

The ties between Soviet scientist and the entire Soviet people were strengthened still more with the adoption of the new Soviet Constitution, the most democratic in the world.

9. *No one can ever forget the happy, festive atmosphere, impregnated, none the less, with the solemnity of the occasion,*

that marked the days of the elections to the Supreme Soviet of the U.S.S.R. and to the Supreme Soviets of the respective Union Republics. As the people walked up to the ballot boxes to cast their votes, one could read in their radiant faces the pride they took in the performance of this important civic duty. The candidates of the Communist-non-Party bloc were elected everywhere, without distinction of sex or nationality, for they were the first specimens of Soviet citizenship—the best of the workers, collective farmers and professionals.

The sessions of the Supreme Soviet of the U.S.S.R. have demonstrated the close harmony existing among all the peoples of the great Land of Soviets, and have given proof of their moral and political unity. This unity, this priceless asset, is the guarantee of the invincibility of the U.S.S.R. The men of science have made common cause with the masses, and this has injected a new content into their lives.

MASS TECHNICAL TRAINING

BY

T. FYODOROVA

1. Free education. 2. Two million skilled workers.
3. Rapid industrialisation. 4. Birth of Stakhanov movement. 5. Collective farms. 6. The Third Five-Year Plan.

When the young citizens of the Soviet Union enter upon their working careers, their prospects of success are indeed unlimited ; for study and labour are protected and encouraged in every way by Soviet law, the doors to knowledge and advancement stand wide open to everyone.

1. What to study further, what trade or profession to choose—these are the only problems that face the Soviet boy or girl just out of high school. For not only is there no charge for tuition in any educational institution in the U.S.S.R., not even in universities or colleges, but students receive State allowances during their term of study.

Young people who enter some factory or mill have vast opportunities for advancement, even if they do not have a complete high school education. *The factory trade schools train highly skilled workers for every branch of industry and transport.* In these schools the pupils receive a general education equal to that provided in high schools, and also learn some particular trade under the supervision of experienced instructors.

The factory trade schools are furnished with special work-rooms, classrooms and experimental laboratories. Practice work is done right in the factories under the supervision of engineers, technicians and skilled craftsmen. Young people are granted State allowances for the whole period of their attendance at the training schools. On graduation each student is given a job at the trade he has learnt.

I studied for several years in the school of the Moscow "Caoutchouc" Factory. This was one of the happiest and most memorable periods of my life. The training I received in this school enabled me rapidly to get accustomed to work in a factory and to cope with the most practical problem in the process of my work.

2. During the fifteen odd years of their existence, the factory trade schools have given the country about 2,000,000 skilled workers of the most varied trades. Quite a few of the country's outstanding industrial workers who have set high records of labour productivity are graduates of such factory schools.

Naturally, not all workers attend these schools. A great number of workers come to the factories without any previous technical training. A worker who entered a factory in Tsarist Russia as an unskilled labourer remained such for many years, and very often all his life. No one took any interest in his advancement.

Today, things are altogether different. When a new, poorly trained or entirely untrained person starts working in a Soviet factory, the factory management and the workers' organizations do everything they can to turn him into a skilled worker as quickly as possible. The factory trade-union committee tries to induce such a worker to

attend some school or study circle to raise his political and cultural level ; the foreman assigns skilled workers to help him out at work ; the factory management pays all the expenses of his schooling.

3. The rapid industrialization of the U.S.S.R. made the task of mastering the new machinery and the new technological processes particularly important. This, in its turn, necessitated the mass training of skilled workers.

Three-fourths of all the machine-tools in the Soviet Union are less than ten years old. They are absolutely new types of machinery, which the majority of our workers never saw before. Old workers had to be taught anew, their technical knowledge refurbished and increased, while at the same time provision had to be made for affording the vast multitude of young people the requisite facilities to become highly skilled workers.

This was the object which the Soviet Government had in mind *when in 1932 it made it compulsory to study the minimum requirements of technical knowledge for 255 trades in heavy industry.* A time limit was fixed after the expiration of which all jobs requiring a certain degree of skill could be filled only by workers possessing such a minimum of technical knowledge, which had to be proved by a certificate to that effect.

This proved a strong stimulus for mastering the new technique. Technical training became compulsory for all workers, both men and women, engaged in the most important trades. Technical study circles and courses were organized in the overwhelming majority of the country's plants and mills, enabling every worker to acquire the necessary minimum of technical knowledge without interrupting his regular work. There was, of course, no tuition charge, for all educa-

tion in the U.S.S.R. is free, as already stated.

Soon this system of technical education was introduced in all industries.

The curriculum of the technical minimum courses instituted for the workers in heavy industry includes the following subjects :

General survey of technology and the organization of production ;

Accident prevention and safety appliances ;

Principal properties of materials ;

Structure, operation and care of machinery and tools ;

The functioning and operation of interconnected machines ;

Elementary principles regarding standards of work, wages and production costs.

During the first half of 1935, State examinations were held throughout the country as a means of checking up the progress made by our workers in mastering the required minimum of technical knowledge. By July 1, 1935, almost 800,000 workers engaged in heavy industry had passed these examinations. More than two-thirds of this number were graded "excellent" or "good."

The value of this system of mass technical education for workers is strikingly illustrated in the person Ivan Gudov, formerly a farm hand and now a Stakhanovite of great renown and a member of the Supreme Soviet of the U.S.S.R. In 1934 he started to work in the Sergo Orjonikidze Machine Tool Works in Moscow as an unskilled labourer. Up to that time Gudov had had no conception of machinery or tools. At the factory he signed up for a six-month technical course, which he completed with success. He rapidly learned the techno-

logical processes and technique of operation of the most complex machines. And the very next year, having become a milling machine operator, Gudov set a world record for labour productivity in his line. He holds the record to this day.

4. The year 1935 marked the birth of the Stakhanov movement, which spread to all branches of industry and agriculture with amazing rapidity. Stakhanovites are people who have completely mastered the technique of their jobs, who are able to squeeze out of technique the maximum that can be squeezed out of it, and who are imbued with the ambition to help increase labour efficiency on a national scale. The Soviet Government wholeheartedly supports the Stakhanovites and has still further extended the technical education of the worker masses. Education within the range of the *required technical minimum has become universal and compulsory for all men and women workers.*

Special advanced technological courses, called Stakhanovite courses, have been set up for those who have passed the State technical minimum examinations. Courses for master craftsmen of Socialist labour have been instituted for outstanding Stakhanovite workers who have set examples of high labour productivity.

A similar educational system is also in force in the railway transport service. In 1936, for example, no less than 500,000 railwaymen were attending various technical minimum courses and study circles. The student body consisted, in the main, of subordinate railway officials, of workers in the most important railroading trades, and of railway shop men.

The foremost transport workers are taking up more advanced technical studies. Workers who have successfully completed their studies are promoted to more responsible posts, to higher positions. Very frequently the head of a

crew or brigade becomes a foreman, an assistant engine driver is made a fullfledged engine driver, a switchman a shunter, and a shunter an assistant station master.

5. Collective farms, State farms, and machine and tractor stations also have a great variety of scientific farming and technical study circles. Here collective farmers learn to drive tractors and operate harvester combines ; they study agronomy and master the technique of Socialist agriculture. Tractor drivers, combine operators, chauffeurs and truck drivers study to become brigade leaders, foremen and mechanics.

Technical education for workers has acquired a genuinely mass character in the U.S.S.R.

The worker in a Soviet factory is not a mere automaton, mechanically performing a set task ; he is not a mere appendage to a machine or lathe. *The general survey of technology and the organization of production, two subjects included in the curriculum of the technical courses, give the worker an insight into the function of each shop and the inter-connection between the various shops, as well as of the technological process carried on in the factory as a whole.* A certain amount of time is devoted in these courses to introductory lectures on the general tasks of the particular branch of industry and on the national-economic plan of the whole country. These technical courses also improve the general education of the workers.

In 1938 the courses for master craftsmen of Socialist labour in the Stalin Works at Kuznetsk were attended by 2,222 workers, including many women. Among the students were steel and iron workers, electricians, mechanics and power plant workers. The vast majority of these were people from eighteen to thirty years of age. Stakhanovites of eleven nationalities attend these courses.

The classes are held in two well-equipped buildings having a total of 64 classrooms. There are special classrooms for the principal general and technical subjects—chemistry, physics, mathematics, general electrical and structural engineering and the machining of metals.

The school library contains 20,000 books. It keeps more than one hundred different newspapers and magazines.

The teaching staff consists of 59 instructors, six of whom are engineers engaged in production. During the first half of 1938, 91 of the students were promoted to responsible positions in various industrial establishments.

The Petrovsky Metallurgical Works (Dniepropetrovsk), the Stalinogorsk Chemical Works and many other large plants have also installed their technical courses in splendidly equipped premises. Six new mass technical training schools were in the Donetz Basin started before the war.

In the autumn of 1938, 218 Stakhanovite courses were given in the Stalingrad Tractor Works. They were attended by 3,300 workers. The special subjects required by the tractor works were taught by over 200 engineers and technicians, and a great number of the factory's best Stakhanovites who had mastered the technique of tractor construction to perfection.

The Molotov Automobile Works in Gorky has about forty Stakhanovite courses.

This method of organizing technical training and of promoting people to leading posts as they acquire the requisite knowledge has become an ordinary, every-day occurrence in the Soviet Union. Scores and hundreds of workers in every factory, mill or mine are taking courses to increase their technical knowledge, and this mass technical training is giving rise to ever increasing numbers of outstanding Sta-

khanovite workers.

In 1936, 34.5 per cent of the young workers in four important industries—machinery, iron and steel, coal and textiles—already possessed a complete or junior high school education. Compare this with 1919, when even in such an important centre of the country as Leningrad young workers on the average did not have more than three years of elementary schooling.

6. During the Third Five-Year Plan period the productivity of labour in the industries of the U.S.S.R. was to increase by 65 per cent. This factor alone would account for an increase of 62,000,000,000 roubles in output of manufactured goods in 1942 as compared with 1937. In railroad transportation, labour productivity was to increase 32 per cent during this period, and in water transport 38 per cent.

One of the vital conditions for fulfilling the Third Five-Year Plan was the training of skilled workers, technicians and engineers, as well as the widespread adoption of the most up-to-date technique and the scientific organization of production. The system of courses for training and requalifying skilled workers and master craftsmen of Socialist labour was expanded. More than 8,000,000 skilled workers of various trades would be trained during this period. A total of 1,400,000 technicians, as well as 600,000 engineers and other highly skilled university and college-trained experts would be graduated during this period.

The Third Five-Year Plan period saw the extensive application of measures directed toward the execution of the historic task of raising the cultural and technical level of the working class of the U.S.S.R. to that of engineers and technicians.

RECORD-BREAKING STAKHANOV MOVEMENT

BY

A. STAKHANOV

1. Stakhanov's life-sketch. 2. World record. 3. Movement spread like wild fire. 4. High public spirit. 5. Up-to-date machinery. 6. Life of security and happiness. 7. No physical exertion.

A powerful movement for more efficient methods of organizing work has been developing in the Soviet Union. This movement has brought in its train an improvement in labour productivity equal to two, three and even ten times the performance heretofore. Its cradle was the coal industry, whence it spread with lightning speed to other branches of industry, and also to agriculture. *It has become a mass movement that has everywhere shattered the old, now antiquated estimates of rates of output and production capacities.*

How is it that this vast movement of Soviet working people for high labour productivity has been named after myself, a plain hewer of coal? What is my method of work?

Before answering these questions, I should like to sketch my life in brief.

1. I am thirty-eight, born into a poor peasant's family. My childhood years were bleak and joyless. At the age of nine I was already working as a hand on a rich peasant's

farm, where I got no pay except my keep. Then I was a shepherd for three years, and after that again a farm hand. Under the Soviet Government I got a job in a mine.

I went to the Central Irmino colliery in Kadievka (now Sergo), where nearly thirty men from my village were employed. There I started my career in the usual way : first I was a breakman, then a pony-man, and finally I came to hew coal myself.

As time went on, I grew attached to the colliery and the people that worked there ; the work became my most vital interest.

When I first started hewing with a pneumatic pick, it took me a while to get the knack of handling the tool. I kept at it, trying my level best, until my perseverance was rewarded. I gradually acquired the technique of the business and my performance steadily increased. While the standard daily rate of output was five tons, which meant covering about three yards, I would often make eight tons, covering as much as five yards. In a year's time I was sent to take a special course in coal-hewing with pneumatic picks. This course helped me a great deal, and I began to hew as much as ten tons in one shift. But I did not want to stop there ; I wanted to keep increasing my output, for even then I realized that eight or even ten tons of coal in a day's work was a long way from what could be got out of a pneumatic pick.

My observations, calculations and reflections brought me to a number of conclusions and practical ideas for increasing output. The coal face I was working was divided into eight small sections. There were ten hewers in every shift, and even if one of us had the abilities to produce more, there was no chance to do so, for lack of elbow room. The small

sections were so crowded with people that they got into each other's way. Besides, the work in general was so organized that the picks were used only about three to three and a half hours a shift, or even less. The rest of the time went into timbering, for we did both the hewing and the timbering ourselves, and while we timbered the picks lay idle.

2. When these handicaps were removed, I hewed 102 tons of coal in a single-hour shift. Such performance was absolutely unheard of ; seven, eight and nine tons had been the maximum output in our pits. This output of 102 tons was a world record. Even in the old coal fields of the Ruhr district, with all their accumulated experience, a worker's average daily output is only about 17½ tons of coal.

Such was the result of the new system of production that swept away every obstacle in the path of the worker's initiative and industry.

And what happened after I made my record ? The very next day Dyukanov arranged his work so well that he hewed 115 tons in his shift. The day after, Terekhin hewed 119 tons, and a few days later Kontsedalov hewed 125 tons and Savchenko as much as 151. In quite a short time I was able to hew 200 tons in one shift. This might really have seemed the maximum. However, Nikita Izotov hewed 240 tons, and Artyukhin 310, scoring 536 tons only a little later. All around me I saw my fellow-workers eager to get more and more coal from their sections, from their picks. Scores and hundreds of people began forthwith to adopt my method, perfecting it all the time. No more than a few weeks elapsed before miners hewing 200, 300 or even more tons of coal with every shift could be counted by the dozen.

3. So this first record due to proper planning and rational organization of production gave rise to ever new records, each more remarkable than the preceding, first in the pits of that one colliery, and later in other collieries and other coal fields. *The movement spread like wild fire to other economic fields—it took firm root in the transport system, in the factories, in agriculture, in fact it embraced every sphere of economic activity.*

So it was that the first Stakhanovites made their appearance, and now they number millions.

The ranks of the Stakhanovite army are swelling irresistibly. By the middle of 1938 there were in the Donetz basin over 350,000 miners holding certificates of master coal-hewers (senior and junior grades). The record for the iron and steel industry is as follows: in the Central Regions, the Stakhanovites make up over 25 per cent of the total number of workers, and in the South as much as 30 per cent. In the heavy machinery industry over a third of the workers are Stakhanovites, 33 per cent in the medium machinery, the transport machinery and the tractor industries, 34 per cent in the electrical machinery industry and about 50 per cent in the oil-refining industry. Thus, in a number of industries from a third to half of all the workers employed are Stakhanovites, that is, people who possess a high degree of proficiency at work, who have shattered the old, now out-of-date ideas of what could be got out of machinery.

Naturally, such a spread of the Stakhanov movement, such a mass increase in labour productivity, was bound to have a very favourable effect on the country's whole economic life, and that is the clue to the successful fulfilment and over-fulfilment of our national-economic plans and the rapid increase in output in every field.

During the period of the Second Five-Year Plan the average output per worker in the coal industry (coal-face workers only) has increased by 70 per cent.

In 1932 the average coefficient of volumetric efficiency of blast furnaces was 1.75 ; in 1938 it improved considerably, going down to 1.14, and at times almost touched 1. In some of the mills the results of Stakhanovite work are even more striking. For instance, at the Stalin Mill in the Kuznetsk Basin the coefficient in 1938 was 0.95, and for one of the furnaces—No. 2—as low as 0.72. The coefficient of the Krivoy Rog Mill was 0.94 in 1938.

In 1933, 2.8 tons of steel was the average rate per square meter of hearth. In 1938 the average was 4.64 tons, while some Stakhanovite smelters have achieved 12 tons and more.

The increase in labour productivity in large-scale industry, during the period of the Second Five-Year Plan (1933-37) has amounted to 82 per cent, as against the 63 per cent envisaged in the plan. In every industry the development of the Stakhanov movement has led to a marked increase in efficiency.

The coal-hewers' pneumatic picks work faster achieving higher productivity ; the smelting of iron is taking less time ; the machinery in the factories is running more smoothly and swiftly ; on the railways, trains are running at greater speed.

How is it that this mass movement for proficiency in production, arising in one spot, spread so fast, with such overpowering force, throughout the country ? Perhaps it was to some extent accidental ? Perhaps the sudden appearance of the movement implies that it will be a temporary, transitory phenomenon ? Far from it. Any such view of

the movement would be profoundly mistaken.

The Stakhanov movement did not develop gradually ; it swept the Soviet Union with whirlwind speed. And the reason it could spread so rapidly was that its roots lie in the very nature of Soviet life today, that the time for the movement was ripe and it only needed a touch-off, an initial stimulant, to break out and begin to spread far and wide.

The Stakhanov movement had its origin among the rank and file—in the pits, at the work benches, in the shops. It arose and developed on the initiative of the masses themselves. In many industrial establishments the Stakhanovites were able to achieve their remarkable results only after overcoming the resistance—at times very obstinate—of those of the managers and engineers who would not part with the old ideas of what were possible production capacities and rates of output.

4. *The Stakhanov movement is a product of the will and high public spirit of the Soviet working people, who are moved by the great desire to employ to the utmost their initiative, resourcefulness, energy and personal capacity for the sake of improving their work, of achieving better results.*

There are several factors underlying this desire, underlying the development of the Stakhanov movement.

In the first place, it was possible for the Stakhanov movement to become a mass movement because the Soviet people know that they are not working for the capitalists, but for themselves, for the more and more complete satisfaction of their own needs. In a country where the entire national income is employed for the benefit of the working people, where

all the means and instruments of production, all the mills and factories, together with what they produce, as well as the land and its mineral deposits are the property of the working people, the whole community, every improvement in the work of the individual contributes to the general welfare. The Soviet people know, they see and realize, that the better work progresses, the wealthier the country becomes and the greater is the prosperity of its inhabitants. That is the reason why the Soviet people put their heart and soul into their work, why they exert every effort, use their abilities to the utmost—to enhance the prosperity of their country. Loving their homeland, they love their machines, their factories, their work.

When Stakhanovites are asked why they strive to score records, they reply as a rule that they have a real interest in their work and that the good results achieved are the natural consequence. This reply voices the general sentiment of the Soviet people.

In May 1936 our mining town of Gorlovka, in the Donetz Basin, was visited by a delegation of French miners. On their return, they published their impressions in *The Miner*—a newspaper appearing in the city of Briey. I shall quote a passage :

“ We could hear the muffled sound of pneumatic picks. There were four men in the gallery, plainly displeased at our appearance on the scene.

“ After we were introduced, however, the Soviet comrades’ attitude changed at once. When they raised their lamps, we could see four smiling black faces.

“ ‘ We are interfering, aren’t we ? ’ I asked.

“‘That’s all right,’ one of them replied. ‘You see, you are our guests, and we thought first it was some of our boys.’

“‘Don’t you get paid if you have to stand idle?’

“‘Yes, we do,’ replied Yermachok, who had been pointed out to us as one of the best Stakhanovite hewers.

“‘So why worry?’

“‘What do you mean? Any time that’s lost means less coal, and we need coal.’

“When he said ‘we,’ it sounded as if he owned the mine.

“I asked him squarely :

“‘Don’t you have enough coal?’

“He waved his hand impatiently :

“‘I mean the country, and you’re talking about me’...

“People work with a will, they take joy in their work. And that is the source of everything.”

5. *There is yet another very important cause for the development of the Stakhanov movement in the Soviet Union : the country has been armed with up-to-date machinery and numerous operations have mastered this machinery. The Soviet people have learned to promote the technique of production, to get twice, three times, ten times as much out of their machinery as before. Many of the Stakhanovites may rightly be called masters of their craft—so well do they know their business, so thoroughly are they initiated into all the secrets of high labour efficiency.*

6. *Finally, a most important factor contributing to the rise and development of the Stakhanov movement has been the greater welfare of the people. A life of security and happiness brings with it a new pace of work. There is more*

team work and energetic application to one's job. When life is good, work is smoother, faster, more productive.

Such are the causes that gave rise to this popular movement, the Stakhanov movement, whose members have come to be the notable of the Soviet land, enjoying universal respect and admiration. They are a direct outcome of the Soviet order, of the Socialist system of society in the Soviet Union. They explain why the Stakhanov movement is developing so confidently, they hold the clue to its power and might.

There are some who think that the Stakhanov movement is variety of the Taylor system. Such a view is profoundly mistaken. Taylor proceeded on the supposition that workers are naturally lazy, that they will always try to work slower than they could. When he established his rates of output, Taylor would take the hardest workers, time their movements and require the same output of all the rest. His system amounts to taking the result of the utmost exertion of effort by the strongest worker as the standard of output for all the others, lowering rates of pay at the same time. Naturally, under the Taylor system only young workers can be employed, people possessed of powerful constitutions and great physical strength, capable of withstanding enormous exertion of effort for a certain length of time. It is a system which can be saddled on the workers only by force, against their will.

The Stakhanov movement, on the contrary, is a voluntary movement of the masses, who are themselves interested in the results of their work.

7. Stakhanovite work does not call for physical over-exertion. It requires only a public-spirited attitude toward one's work and a thorough study of one's machinery and its technique.

Stakhanovite work is a combination of manual and mental work. It enables the Stakhanovites to show their mettle; to display their faculties, to give free rein to their creative ideas ; it signifies the victory of man over the machine.

The Stakhanovite movement is significant, for it is the first token of the nascent rise of every worker to the cultural and technical level of an engineer or technician. Such progress by the working class will obviously mean still higher labour productivity, a degree of proficiency in production that will provide the universal abundance which the Soviet people are working to achieve, since that is the essential prerequisite to effect the transition to the new, Communist, social system, under which every member of society will receive all products according to his needs, the needs of a culturally developed human being.

Such is the significance and such the outlook of the Stakhanov movement.

THE FOURTH ESTATE

FREEDOM OF THE PRESS

BY

VERA GOLENKINA

1. Ten-fold increase. 2. Travelling newspapers. 3. Literary works. 4. Children's books. 5. Soviet-U.S.A. comparison. 6. Characteristics of publications and contributors. 7. Workers' articles. 8. Campaign against bureaucracy. 9. Contact with readers. 10. Mouthpiece of the Party. 11. Economic Construction.

The U.S.S.R. enjoys freedom of the press. This right is guaranteed by Article 125 of the Constitution of the U.S.S.R. which states :

".....the citizens of the U.S.S.R. are guaranteed by law :

(a) *Freedom of speech ;*

(b) *Freedom of the press ;*

(c) *Freedom of assembly, including the holding of mass meetings ;*

(d) *Freedom of street procesions and demonstrations.*

"These civil rights are ensured by placing at the disposal of the working people and their organizations printing presses, stocks of paper, public buildings, the streets communication facilities and other material requisites for the exercise of these rights."

And, indeed, in the U.S.S.R. printing shops, paper mills, huge halls in which to hold meetings and everything else needed to make free speech and a free press realities are wholly and completely at the disposal of the working people.

In 1913, that is, on the eve of the World War, only 859 newspapers with a total circulation of 2,700,000 copies were published in what was then the Russian empire.

Most of the newspapers were owned by financiers and bankers, industrialists, manufacturers and big landowners. Policy was dictated to the biggest newspapers of pre-revolutionary Russia by the Russo-Asiatic Bank.

Since the Revolution the U.S.S.R., once a backward, illiterate country, has become a land of progress, literacy and culture, and has developed an extensive network of elementary, secondary and higher schools in which instruction is given in the respective native languages of its peoples.

1. *Every department of the press has been broadly developed. In comparison with the last pre-war (1913), the number of newspapers published in the Soviet Union has grown tenfold (8,550 on January 1, 1939) while their circulation has increased fourteen times (47,520,000 copies). The total annual circulation of Soviet newspapers topped the 7,000,000,000 mark in 1938.*

The leading newspapers have exceptionally large circulations. *Pravda (The Truth)* has a circulation in excess of 2,000,000 copies. *Izvestia (The Gazette)*, published under the auspices of the Soviets of Working People's Deputies of the U.S.S.R. is printed in 1,660,000 copies and *Trud (Labour)*, the press organ of the Central Council of Trade Unions, in 480,000 copies.

Other newspapers of large circulation are the central trade organs of the various industries, published by the respective People's Commissariats jointly with the Central Committees of the corresponding trade unions. Prominent among these are *Industria* (Industry—the press organ of heavy industry), *Uchitelskaya Gazeta* (The Teacher's Journal), and the newspapers issued by the People's Commissariats and trade unions of Water Transport, Finance, Aviation, Light Industry, the Food Industry, Agriculture and the Timber Industry.

The Red Army and the Red Navy have many newspapers of their own. Besides the central papers, *Krassnaya Zvezda* (The Red Star) and *Voyenno-Morskoi Flot* (The Navy), there are numerous army, army corps, divisional and brigade papers, many of which originated in the days of the Civil War.

There are 3,993 local newspapers published in the various districts of the U.S.S.R. with a total circulation of 6,000,000 copies.

The larger industrial establishments, institutions and State farms issue their own newspapers. These appear either every other day or once a week, and the circulation of many of them runs into tens of thousands. There were 4,604 such newspapers in the various factories, State farms and machine and tractor stations in 1937.

The smaller industrial establishments and institutions, and the collective farms, schools, factory shops and rest homes put out wall newspapers (the articles being either written by hand or typewritten) which treat of the life of the establishment or institution and fight for improving production, raising the cultural level of the workers, etc. They indulge extensively

in healthy criticism aimed at improving production. As the larger establishments also have a wall newspaper for every department, the total number is indeed enormous.

2. There are also many "travelling" newspapers, newspapers on wheels. During the spring sowing and autumn harvesting, miniature printshops mounted on trucks and equipped with radio receiving sets go out into the fields where the fight for high harvest is being waged. They are the "travelling" headquarters of some newspapers. News items about Stakhanovite records in the fields, about the results of Socialist competition among the tractor brigades and on the amount of work done by the harvester combines, as well as articles on the shortcomings of the work, written by the collective farmers themselves, are printed in the paper the very same day, together with the foreign and domestic news picked up on the radio.

The 1,880 periodicals published in the U.S.S.R. have a total annual circulation of 250,000,000 copies.

3. The tremendous interest of the millions of Soviet working people in political questions and their eagerness to get a thorough political education has led to a colossal growth in the publication of the classics of Marxism-Leninism. In the period of 21 years from 1917 to 1938 a total of 395,400,000 copies of the works of Marx, Engels, Lenin and Stalin were published in the U.S.S.R. and those of Saltykov-Shchedrin, the famous Russian satirist, in 5,587,000 copies, which means 80 times as many before the Revolution.

There is probably no better way to gain a swift understanding of the many-sided growth and great cultural achievements of the Soviet Union than to examine and survey its recently published books.

The publication of literary works has increased more than sevenfold (15,900,000 copies in 1913 and 117,800,000 copies in 1937), books on agriculture almost eightfold (3,000,000 and 23,200,000), books on social science and political works seventeen times (17,700,000 and 308,600,000) and technical books twenty-seven times (2,200,000 and 59,400,000).

During the three years, 1935-1938 alone, among the great Soviet authors there were 9,151,612 copies of Maxim Gorky's works issued in 49 languages in the U.S.S.R., 2,536,385 of the poet, Vladimir Mayakovsky's, and 1,533,210 of Sholom Aleichem's. Alexei Tolstoy, the author of *Bread and Peter the Great*, and Mikhail Sholokhov, the author of *And Quiet Flows the Don* and *Virgin Soil Upturned*, have been honoured through being elected members of the Supreme Soviet of the U.S.S.R. During these three years, 2,656,870 and 2,668,530 copies of their works, respectively, were published.

Pre-revolutionary Russian writers are also widely read. During the same period, 7,874,557 copies of Leo Tolstoy's works were published in 42 languages, 5,185,700 of Chekhov's in 41 languages, 4,120,772 of Turgenev's and 2,766,165 of Gogol's. Most sensational of all, however, was the publication of 13,400,000 copies of Pushkin's works in 64 languages during the single year 1937 in connection with the celebration of his centennial. This, however was only a little over one half of the 24 million copies of his works which have been published since 1917.

Not only are the books of Soviet and Russian authors given an enormous distribution, but many a European or American author has had more copies of his books published in the Soviet Union than in his native country. Among the

European writers, 1,510,312 copies of Romain Rolland's works were published during 1935-38, 918,330 of Henri Barbusse's, 521,083 of Emile Zola's, 1,139,340 of Lion Feuchtwangers, 689,050 of Heine's and 492,835 of Shakespeare's. Among American writers, 1,549,390 copies of Mark Twain's books, 1,430,975 of Jack London's, 3,00,000 of O. Henry's and 100,000 of Hemingway's were published during these three years.

4. Equally noteworthy are the figures illustrating the increased publication of books for children. The total number of these published in 1913 was 6,550,000 ; by 1937 this figure had swelled to 66,396,000, that is, had increased tenfold. Special newspapers in the various native tongues are issued for children. The most popular children's newspaper,—the *Pionerskaya Pravda* (*The Pioneer's Truth*) has a circulation of 900,000.

Many Soviet children's writers are enormously popular. During 1935-38, for example, 7,511,984 copies of the children's poet, Samuel Marshak's works were issued in 41 languages ; 6,131,888 of Kornei Chukovsky's ; 5,215,110 of Agnya Barto's ; and 1,263,110 of Mikhail Il'in's, the author of *New Soviet Primer* and *Men and Mountains*. During 1937 as many as 66 million copies of children's books and 118 million copies of fiction and poetry were published in the U.S.S.R.

5. It is always a little difficult to grasp the astronomical character of Soviet statistics. It is difficult, for instance, to visualize 118 million volumes and to think what they mean. In terms of cultural achievement to a country which was largely illiterate twenty years ago. It is equally difficult to understand that these volumes comprise only a fraction of all books published in the Soviet Union. Since 1932, at least, half a billion or more copies of books have been issued

each year in the Soviet Union, the number for the single year, 1937, totalling 673,500,000. If one compares Soviet figures in Socialist Construction in the U.S.S.R. with those for America in the 1939 World Almanac, one finds that in 1936 while 10,436 new titles and new editions together were published in the United States, 43,340 titles were published in the U.S.S.R., of which 11,696 were published in the languages of national minorities—those other than Russian.

6. *Under Soviet rule the printed word has penetrated to the remote parts of the vast territory of the U.S.S.R. Newspapers are being published in 70 languages and books in 111 languages of the peoples of the U.S.S.R., of whom 40 have developed written alphabets only since the October Revolution.*

Newspapers, books and periodicals are so priced as to be within the means of every Soviet citizen. It is the aim of the Soviet press that every issue should help to popularize advanced ideas, to encourage the public-spirited workers in all spheres of labour, science and culture, reveal any shortcomings there may be on one or another sector of construction of the new Socialist life, flail and ridicule all bureaucracy and redtape and expose the spies and saboteurs sent into the U.S.S.R. by the fascist countries. In all its activities the Soviet press is guided by the aim of building classless society, in which labour productivity will reach such a high level as to make possible the realization of the principle: "From each according to his ability, to each according to his needs", that is, towards the achievement of Communist society, towards the realization of the dream of the finest minds of humanity.

The Soviet press maintains the closest contact with the masses. Besides their huge army of trained professional

journalists, the 8,550 newspapers published in the U.S.S.R. receive contributions from more than three million factory and village correspondents.

The factory and village correspondents are reporters of a special type, a specifically Soviet type. They are correspondents who voluntarily undertake to contribute articles to the press on the achievements or shortcomings of the industrial establishments or institutions in which they work, or the collective farms of which they are members. They initiate public discussions on various questions pertaining to Socialist construction, give publicity to good work and call attention to instances of poor work in the State or economic apparatus.

7. In any issue of any Soviet newspaper you can find articles and news items signed by workers, employees, teachers, collective farmers and other public-spirited citizens, criticizing some shortcoming in this or that branch of economy or administration. Quite often you will run across a news item written by some geologist reporting the discovery of new mineral deposits, or an article by a factory engineer submitting a proposal for improving work or calling for the organization of a new branch of industry, or a letter from a botanist who has evolved a new variety of plant.

A constant stream of such letters, news items and articles written by workers, collective farmers and intellectuals pours into the thousands of Soviet newspaper offices daily and even hourly. *Pravda*, the organ of the Central Committee of the Communist Party of the Soviet Union (Bolsheviks), receives as many as 800 such letters in one day. *Uchitelskaya Gazeta*, the organ of the People's Commissariats of Education of the various republics and the teachers' union, receives from 4,500 to 5,000 letters a month from its readers. In the editorial offices every letter is given prompt and thoughtful attention.

A great many of the letters are published, but lack of space makes it impossible to publish them all. However, measures are taken with regard to each letter—whether published or unpublished to satisfy just grievances and eliminate irregularities. The Soviet authorities lend an attentive ear to the voice of the press and quickly react to any warning signals it may sound.

One of the fundamental principles of the Soviet press is criticism, regardless of person. In other words, anyone, no matter what post he may hold, irrespective of his status, may be subjected to oral and printed criticism or any fault he may have committed. Criticism aids the Bolshevik Party and the Soviet Government to disclose mismanagement and inertness, and to correct all kinds of deficiencies in the shortest possible time.

The citizens of the U.S.S.R. freely state in the press their opinions on any economic or political question. When necessary they demand an explanation from the head of the industry or the State apparatus in question. Thus, for example, the leading newspapers have published questions addressed by individual citizens to various People's Commissars, among them the People's Commissar of Foreign Affairs. And each of these inquiries received a full reply, also through the press.

8. *The workers correspondents carry on a vigorous, persistent campaign against bureaucracy and against violators of Socialist labour discipline, wage-hogs, idlers and other disorganizers of production.*

The Soviet press maintains various forms of contact with its readers. Apart from extensive correspondence, there are well prepared meetings between groups of readers and newspaper-staffs for the purpose of discussing problems and

exchanging opinions. For example, the editors of *Machino-stroyeniye* (*Machine Building*—the official press organ of the People's Commissariats of the Machine Building Industries), arranged a meeting in January, 1938, with the engineers and Stakhanovite workers from the machine-building plants. Seven hundred of its readers discussed with the staff the experience gained by the Kuibyshev Plant in Kolomna—one of the largest machine building works in the U.S.S.R.—in mastering the new technological processes. The readers suggested to the editorial board how best to continue the paper's drive for introducing and mastering these processes.

In preparation for the new school year of 1938-39 *Uchitelskaya Gazeta* held a conference with teacher members of the Supreme Soviet of the U.S.S.R. Among those present at the conference were teachers from the republics of non-Russian nationalities: Georgia, Armenia, Kazakhstan and others. The outstanding teachers here assembled advanced concrete proposals for improving public education. According to their general policy, the editors of the newspapers carefully noted these suggestions and advocated their adoption in its columns.

At the conclusion of the first term of school this newspaper, in order to ascertain how the schools and the various public educational bodies had functioned during that period, again invited a group of readers—this time village school teachers—to the editorial offices. This particular meeting between the editorial staff and the readers was attended by M. I. Kalinin, President of the Presidium of the Supreme Soviet of the U.S.S.R., who took an active part in its business.

9. The editors-in-chief of newspapers as well as the associate editors receive visitors daily and listen attentively to what they have to say. This practice extends the newspapers'

contact with their readers. Each year from 17,000 to 18,000 visitors call at the editorial offices of Pravda. More than twelve thousand call at *Izvestia*.

It has become a tradition for all Soviet newspapers to hold readers conferences at which the editors give an account of their work to their readers. Eight hundred readers took part in the readers' conferences held in 1938 by *Sotsialisticheskoye Zemledeliye* (*Socialist Agriculture*), the press organ of the People's Commissariat of Agriculture and of the trade unions of the agricultural workers and specialists of State farms and machine and tractor stations. The same year the editor of the Moscow regional and city newspaper *Moskousky Bolshevik* (*The Moscow Bolshevik*), reported on the newspaper's work to 2,000 readers.

All these measures promote close contact between the newspapers and their readers, help the newspapers to become true servants of the people and make it possible to raise issues promptly and effectively.

Soviet newspapers came into being when street fighting against the defenders of the old order was still going on. The Soviet press of that period roused the workers and peasants to fight against the republic's domestic and foreign enemies, propagated the slogans of the Soviet Government and scathingly denounced the deserters, self-seekers and profiteers.

With the conclusion of the Civil War, the Soviet newspapers dedicated their columns largely to other problems. Besides dealing with the questions concerning the political education of the masses, they focussed attention on the economic and cultural development of the country.

In the U.S.S.R. the press must be a propagandist, an agitator and an organizer—that is how Lenin formulat-

ed its tasks. Here are a few examples illustrating this conception.

During the years devoted to carrying out the first two Five-Year plans, Stalin's slogans about mastering the new industrial plants and the new technique were particularly popular. The Soviet press eagerly took up these slogans. Correspondents from *Pravda*, *Izvestia* and *Industria*, working in groups at the large industrial enterprises, did yeomen's service in making these slogans effective.

The Soviet press also plays a prominent role in spreading the Stakhanov movement.

"I remember," writes Alexei Stakhanov, the famous coal miner who initiated this remarkable movement, "that seeing my record featured in the press spurred me on towards new achievements in the field of labour productivity. The press must be given credit for the efficient way in which it brought my experience to the knowledge of my fellow workers in other mines. As a result the Donetz coal fields, which used to give the country 140,000-150,000 tons of coal a day now produce more than 200,000 tons."

Newspapers have become indispensable in the daily life of the Soviet citizen. They appear everywhere—in the Caucasian *aul*, the Uzbek *Kishlak*, the mountain hamlets of the Pamir and in the wintering places of the arctic explorers on Novaya Zemlya. They are issued in factories and mills, in universities and colleges, in Red Army units, theatres, mines and submarines. Engineers and artists, actors and bakers, architects and deep sea divers, writers and sailors, aviators and printers, bank employees and coal miners all have their own regularly printed newspapers.

In the mountains and in the desert sands, in the zone of eternal frost and in the subtropics, the first thump of the

labourer's shovel is answered like an echo by the click of a portable press, already busy putting out a newspaper for the inhabitants of cities-to-be while they are under construction.

The first issue of *Na Zashchitu Rodiny* (*in Defence of Our Country*), put out by the men of the Red Banner First Detached Army, appeared at Lake Hassan in 1938 in the days when the Japanese aggressors were staggering back across the border. Just before going into battle, the Red Army men published the *Ataka* (*Attack*), a special issue of their wall newspaper.

10. "The press," says Stalin, "is the only instrument whereby the Party can speak daily in the interests of the country and its citizens. It was through the press that the Soviet Government submitted the draft of the Constitution of the U.S.S.R.—the fundamental law of the State—to a nation-wide discussion. The Government Constitutional Commission made a thorough study of all amendments to the draft suggested by the citizens of the Soviet Union and published in the press. Stalin, the chairman of the commission, carefully analyzed these proposed amendments in his report at the All-Union Congress of Soviets. A number of them were accepted by the Congress and duly incorporated in the text of the Constitution of the U.S.S.R.

In 1937 and 1938 an enthusiastic campaign that stirred the whole country ushered in the elections to the Supreme Soviet of the U.S.S.R. and the Supreme Soviets of the Union Republics. The Soviet press played no small role in campaigning for the candidates nominated by the Communist and non-Party bloc to the highest organs of State authority in the land of Soviets. The papers were full of articles, straightforward stories sent in by ordinary Soviet citizens telling

about the life and work of the candidates from first-hand knowledge. One factory newspaper *Udarnik Metallostroya* (*The Metal Construction Shock Brigader*) printed side by side an election campaign speech by Professor Mysh, a physician, then candidate for the Supreme Soviet of the U.S.S.R. and a letter from a certain Comrade Petrakova whose life he had once saved. Petrakova wrote that Professor Mysh "loved his fellowmen, and loved and knew his work." And this was the best recommendation any candidate could wish for.

A Moscow factory paper, *Za Sovietsky Podshipnik* (*Soviet Ball Bearings*), serving the Kaganovich Ball Bearing Plant, conducted an interesting and convincing campaign in support of Comrade Pichugina, formerly worker of that plant, running for the Supreme Soviet of the U.S.S.R. In a few short years Comrade Pichugina, like so many others in the Soviet Union, had made much headway in life. Starting out as an unskilled worker on the plant's construction site, she had become a highly skilled mechanic. It was she who assembled the first Soviet ball bearings. She was also a prominent figure in public life, having been elected chairman of a district Soviet in the city of Moscow. In espousing the candidature of this true daughter of the people, the newspaper showed that the road traversed by Comrade Pichugina was typical of many gifted people who had formerly been browbeaten and stifled by Tsarism and had found application for their abilities only under the Soviet system. Workers, foremen and engineers, as also housewives who had occasion to meet her in the course of her public work and collective farmers from her native village, contributed articles and personal items about her to the factory newspapers. And every line they wrote was convincingly simple and true to life.

The draft of the Third Five-Year Plan for the development of the national economy of the U.S.S.R. was likewise widely discussed in the press.

Any useful new enterprise, whether in production, science or art, is promptly taken up by the press. Outstanding men in the field of production, the Stakhanovites, are frequently featured in its columns. Their methods of work are described in great detail for emulation by others.

It is customary for the Soviet press to give brief statistical summaries daily on the state of the current agricultural work (ploughing, sowing, reaping, etc.) on the day's output of coal, iron, steel and automobiles, and the figures for carloadings. These data are of absorbing interest to the Soviet reader, which is but natural, for steel and grain, coal and machinery, are the leading items that go to make up the national wealth which ensures the might of the U.S.S.R.

11. The Soviet press has grown to be a gigantic force which actively manifests itself in absolutely all spheres of economic construction and cultural development in the land of Socialism. Some of the country's finest people, the ablest representatives of the Soviet intelligentsia, are engaged in newspaper or literary work.

All these people, as well as the professional journalists, enjoy the esteem of the Soviet reader. Many Soviet journalists conduct an extensive private correspondence with their readers. The masses know them, come to them with questions, seek their advice and assistance. There is thus the closest contact between writer and reader.

The Soviet Government and people put a high value on the work of the representatives of the press. Only recently, by order of the Presidium of the Supreme Soviet of the

U.S.S.R., 172 Soviet writers were decorated with tokens of distinction, including the highest—the Order of Lenin and the Order of the Red Banner of Labour. A number of Soviet men of letters, Alexei Tolstoy, Mikhail Sholokhov and others, have been elected to the Supreme Soviet of the U.S.S.R.

All this testifies to the important part which the Soviet press is playing in the life of the country and to the honourable position which pressmen hold among the working people of the Soviet Union.

MOTION PICTURE—ART AND INDUSTRY

BY

PROF. S. EISENSTEIN

1. Help and advice. 2. Curious incident. 3. Public interest in films. 4. Lenin's & Stalin's patronage. 5. Film in remote corners. 6. Youth's ambition. 7. Initial struggle & development of film industry. 8. Children's films. 9. Cameraman's role in topical films. 10. Institutes for training & research. 11. Coincidences of art & real life. 12. Awards & careers for film people. 13. Themes & motto of Soviet films.

We say that the screen is of all arts the most popular in the Soviet Union not for the sole reason that it attracts millions of people to the picture theatres but because of the great public interest displayed during the actual production of films.

1. When the newspapers reported that my studio group was to start work on "Alexander Nevsky" thousands of people wrote to me with helpful suggestions and valuable historical data, besides recommending original sources. This was not an isolated case. Other men in the film world have had similar experiences, notably the Vassiliev brothers who made "Chapayev" and Michael Romm, the producer of "Lenin in October and Lenin in 1918." Participants in the revolutionary events of 1917, old partisans, men who had served in the Civil War, sent their diaries, photographs and various documents relating to the first years of Soviet power. Many

of these correspondents came to Moscow and talked things over with the producers, operators, actors and scenic designers—not a surprising thing considering the close ties that exist in the Soviet Union between the arts in general and the people. Look through the huge mails that all Soviet producers, scenario writers and actors receive practically every day. Here are letters from places in sunny Georgia, the Arctic Circle, the shores of the Pacific, the table lands of the Pamirs, from all ends of the vast Soviet Union.

2. Famous film stars in the West also receive letters by the sackful. But they are mostly of an intimate character from smitten admirers. But the famous Soviet film star Luba Orlova receives other kinds of letters besides those appreciating her acting. For instance, when it became known that Orlova was to play the part of a mail-girl (Strelka) in the film "Volga Volga", young mail carriers all over the country sent her letters of advice on how to play the part. In 1939 when Orlova was studying the part of a mill-girl prior to a "shooting" of the film in which she was to play that role real-life mill girls had been as quick to respond as their fellow film fans in the post offices were.

The screen enthusiasts' concern for the progress of the art is displayed not only in letters and articles in the press. However remote the place, film folks are always sure of a hearty reception. There is no lack of volunteers when mass scenes are to be filmed, though there are exceptions, as producer Arnstam could tell us. A year ago he was working on "Friends," a film dedicated to the mutual amity of the Soviet peoples. The scene was laid in the Autonomous Republic of Kabardino-Balkaria. One of the episodes to be shot was the arrival of Soviet regulars in the district to assist the rebel mountaineers and the routing of the Whiteguards. The local people were delighted to take part in the filming.

of this episode. They came on horseback in regular squadrons. And bravely they played. But they were painfully embarrassed when the producer asked for men to play Whiteguards. The past was so hateful to them that no one was willing to put on the livery of the old regime. None were willing to assume the roles of men so hated by the people.

This was followed by another curious incident when the Red Army units went into attack. The non-participants in this scene, local collective farmers, who had so far been interested onlookers, immediately without waiting for any signal, charged irresistibly after the Red Cavalry with a mighty cheer to devastate the enemy.

Another case comes to mind, equally striking. It happened during the filming of Lenin in October—the scene where the Red Guards and soldiers storm the Winter Palace. Fires had been lit for the participants, as the night was bitter cold, and an old watchman was engaged to keep them well ablaze. The signal was given, the Red Guards and soldiers charged at the double. Imagine the astonishment of the producer when he saw the old watchman running at the head.

The scene was spoiled. The producer asked the watchman what he meant by it. The old man replied: "I couldn't help it. I took a hand when the Winter Palace was really captured."

Generally speaking our historical films are done on such a grand scale that large numbers of non-professionals are required for the mass scenes. In a number of cases the producer has regular Red Army troops placed at his disposal. The men and commanders are only too willing to participate in scenes resurrecting the glorious past of the Red Army, the exploits of the great soldiers that led the army of the people in the Civil War. In such cases the producer's task is an

easy one, for the actors have merely to impersonate themselves, their older brothers, their fathers and comrades. There are other parts, however, that do not come naturally to Red Army-men—then things are liable to go wrong.

In the film *Volchayevsk Days* the brothers Vassiliev attempted to reproduce an actual episode of the Civil War. The partisans had watered the slopes of a steep hill in mid-winter to make their position inaccessible to the Japanese invaders. The producers did the same, thinking that the icy slopes would baffle the Red Army-men (dressed in Japanese uniforms) as they had the troops of the Mikado. However, when the men heard the word of command, not knowing what was in the minds of the producers, they set about the job in real earnest and reached the top. The scene had to be taken all over again.

3. I have already noted the great public interest displayed during the actual production of films. When a moving picture is released, the public gives its impartial and discriminating opinion. Faults are severely criticised, achievements warmly encouraged, all in the friendly spirit of people who are interested in the progress of art and feel a moral responsibility for the quality of Soviet films.

Such is the organic union of the Soviet people with Soviet art and the servants of art who, in their turn, draw their inspiration from the masses.

The Soviet Government is a great patron of the arts and the people engaged in them, providing every opportunity for the development of individuality and artistic talent.

4. *Much attention is paid to cinematography. During the Civil War great importance was attached to the development of the film industry in the young Soviet*

Republic. That was the time when Lenin himself declared that the motion picture was the most important of the arts to the Soviet State.

Since then the Communist Party and Joseph Stalin personally have been constantly promoting the development and improvement of Soviet cinematography.

The motion picture has become a prime cultural necessity to the Soviet citizen. The best films are distributed by thousands of positive copies and shown everywhere, not only in the big modern theatres in the cities and the cinemas in the countryside, but in clubs, the apartments of our Stakhanovites and other people of note. They are shown to collective farmers far out in the fields, to army and navy men and passengers on ships at sea.

5. Then there are the travelling cinemas employing a great army of operators equipped with portable projectors. They show films in the most remote corners of the country, the Siberian forests, the Alpine meadows of the Caucasus, the villages of Turkmenia and Tajikistan and the auls (native villages) of Kazakhstan.

To the far northern districts new pictures are delivered by air. The operators there take them on their itineraries by dog or reindeer team. In Yakutia, for instance, one operator recently made an interesting tour by dog-team. In a few months he covered about fifteen hundred miles and demonstrated his films in all the wintering camps on his route. But this, of course, is an exception.

Travelling cinemas are generally installed in motor vehicles of the latest make. Among them are a fair number of the new outfits which show films out of doors in broad daylight.

Considerable attention was paid to the question of motion pictures as an important department of cultural development during the discussion on the Third Five-Year Plan at the Eighteenth Congress of the Communist Party. Provisions were made for a six-fold increase in the number of sound picture installations by the end of the Third-Five-Year Plan in 1942.

The immense popularity of the best screen actors and producers is shared by the heroes they create. If one were to speak of the fearless, light-hearted, brave young man of our age, boldly overcoming all difficulties, one would involuntarily remember the young Bolshevik, Maxim, of the screen trilogy "*Maxim's Youth, Maxim Returns and the Viborg Side*." Maxim has become a household word.

6. To become heroes like the commanders Chapayev and Shcors, to emulate the men of the past and present of our country, is the cherished ambition that the screen has kindled in the hearts of all our children.

I have been told that after the release of my film "Alexander Nevsky," showing the struggle of the Russian people against the German invaders in the thirteenth century, notably the famous battle between the Russian cohorts and German knights fought on the ice of Lake Peipus, there was a run on paper clips in the stationers' stores. Children were buying boxes of paper clips by the dozen to make chain mail as worn by Alexander Nevsky. Every day, after school, young saviours of Russia armed with ply-wood shields and broom-stick lances would drive the Teuton invaders from their courtyards.

The most popular films are those which show Lenin and Stalin, the leaders of the masses. Such are the pictures "*Lenin in October, Lenin in 1918*" produced by Romm; the

"Great Dawn" produced by Chiaureli, "*the Man with the Gun*" produced by Yutkevich.

The Soviet picture-goer also admires the outstanding screen artists of the West. Charlie Chaplin, for instance, is enormously popular in this country. The film of this great star are shown with unflinching success in all parts of the country, and the recent celebration of his fiftieth birthday aroused warm public interest.

7. Twenty years ago, encircled by a ring of enemies, exhausted by blockade and famine, the Soviet country began to develop its motion picture industry. The first Soviet films were made in unheated studios by half-starved people, whose enthusiasm made up for the shortage of apparatus, film and other accessories.

Before the Revolution in Russia there were private film studios very primitively equipped. They competed successfully with the foreign studios but we must admit that only a small number of the pictures released in those days had any artistic merit.

The motion picture as an art developed only after the Revolution. The first Soviet films were propaganda films for the men at the front. Excellent news reels were made although the cameramen had only scraps of film with which to capture the unique events of those glorious days. These films are now treasured as invaluable documents showing the exploits of a people fighting for freedom and happiness.

Very often cameramen had to work under fire. They shared the rigours of life at the front and followed the troops into attack. One of these cameramen was the now famous Tisseh. Another was the equally famous Yermolov, who later took part in the production of the screen trilogy showing the life of our great Russian writer, Maxim Gorky.

visited by the Polar flier Vlassov. When the airplane landed on the ice near the camp the first man Vlassov saw was Papanin himself taking a picture of the arrival of the guest from the mainland.

10. Producers, operators, scenario writers and studio artists are trained at the State Institute of Cinematography in Moscow. This Institute has specially equipped laboratories, demonstration halls, studios and a collection of practically all the films that have appeared on the screen anywhere. The influx of students is so great that a new extension is being made, equipped with the most up-to-date motion picture technique. This Institute is the first of its kind in the world to be started about fifteen years ago.

The doors of the Institute of Cinematography are wide open to talented youth. As in all colleges in the Soviet Union the Institute's training is free of charge and the students receive a regular allowance from the State. After graduating from this institute they go to the studios where, after a trial period, they are given work to do on their own responsibility.

Motion picture technicians are trained at another institute in Leningrad. A third institute, in Moscow, conducts research on the problems of stereoscopic films and the improvements of cameras, projectors, and films.

11. It is curious how art and real life have their coincidences. A few years ago, in that remarkable film *Deputy of the Baltic*, the actor Cherkassov played the part of the professor who was elected to the Petrograd Soviet by the sailors of the Baltic Fleet in the early days of the Revolution. And not long ago, in 1938, this talented representative of the Soviet intelligentsia, Cherkassov, was himself elected from a Leningrad constituency to the Supreme Soviet of the Russian Soviet Federated Socialist Republic.

Cherkassov is no exception. There are quite a number of movie people among our statesmen. For instance, the fine producer Chiaureli, the working people of Georgia elected him to the Soviet parliament, the Supreme Soviet of the U.S.S.R.

About two hundred people in the film industry have been given the highest award—an order of the U.S.S.R. The producers Dovzhenko, Pudovkin, Kozyntsev, Trauberg, Chiaureli, Alexandrov and others wear orders as distinguished citizens of the Soviet Union. The famous screen actress Orlova has been decorated by the Government with the Order of Lenin and the Order of the Red Banner of Labour.

12. The celebrities of Soviet screenland, even its doyens, are young in years. Their average age is probably below forty. The producers of the Maxim trilogy Kozyntsev and Trauberg began their career when they were hardly out of their 'teens. The producer Trauberg produced the "*Blue Express*", shown all over the world, when he was only twenty-four. This is because our young scenario writers, actors and producers easily receive opportunities to display and develop their talents. *The careers of Soviet film people depend only on their capacity, their ability to create first-class works of art.*

13. Extraordinarily wide is the range of themes and genres that Soviet cinematographists are working on now. Epics and eccentric omedies, dramas and fables, adventure films and pictures for children, animated cartoons and puppet films, the combination of the animated cartoon with living actors, etc. The film studios of the Soviet Union are making films on the Stakhanov Movement, Socialist construction and the mutual friendship of the peoples. Classical literature too is being put on the screen.

Not to rest content with present achievements is a motto film workers share with all other people in the Soviet Union. They are constantly striving for improvements, continuing the search for new methods of cinematic expression, ever mindful of the three essential elements of Soviet art ; realism, psychological sight, ideological significance.

The virtue and significance of Soviet cinematography is that it gives a true portrayal of life in our Soviet country and has really become, of all arts, the closest to the masses ; that it is actively contributing to the further consolidation of our new system of society ; that it has a great formative influence on the minds of the Soviet people. To this is due its immense popularity among the peoples of the U.S.S.R., their high opinion and encouragement of the art.

EMANCIPATION OF THE PEOPLE

BY

P. KOVARKAK

1. Collectivization.
2. Laboratories.
3. Record yield.
4. Women's flying record.
5. Women deputies.
6. The change.

Under the government of the Tsars the peasants of Russia were kept in a state of ignorance and darkness. Pobedonostsev, the Procurator of the Holy Synod, once declared cynically : " Illiterate people are easier to rule." On landlords' estates, farm labourers worked as much as seventeen and up to twenty hours a day. The peasant who worked on his own farm was usually busy 15-16 hours a day. Practically all the peasants were illiterate.

The October Socialist Revolution emancipated the peasants of Russia from the yoke of the landlords and capitalists, and put an end to their poverty and ignorance.

1. The profoundest change in the life of the Soviet peasants was wrought by collectivization. By joining the collective farms the peasants, who formerly could scarcely afford even a plough, have become partners in large-scale and powerfully equipped agricultural enterprises. The erstwhile poor peasant whose lifelong dream was to obtain a horse now operates harvester combines, is in charge of thousands of acres of land, and handles accounts running into hundreds of thousands and millions of roubles.

The economic life of the countryside has changed, and with it its cultural aspect. The collective farms use the most up-to-date agricultural machinery and apply modern scientific methods of farming. The productivity of their labour is steadily rising. Their output is constantly increasing, and their wealth is growing. On January 1, 1939, the deposits of the collective farms on their current accounts in the State Bank aggregated 2,519,200,000 roubles, as against 1,500,000,000 roubles on December 1, 1937.

The collective farmer spends about two-thirds the time the individual peasant has to spend in work on his small farm, and yet produces twice as much as the latter.

The use of machinery and the rational organization and acceleration of the various processes of agricultural production have lightened the labour of the collective farmer and created the conditions necessary for study and recreation.

The Soviet Government spares no means or efforts to improve the well-being of the collective farmers and to raise their cultural level. In the whole of Tsarist Russia there were altogether 222 popular recreation centres, and even these led a miserable existence, whereas fully 88,000 clubs and 56,000 libraries function in the rural districts of the Soviet Union.

In the villages of Tsarist Russia the land was tilled with primitive implements, such as were used in the Middle Ages. Naturally, there were no tractor drivers, combine operators, or chauffeurs in the villages of Tsarist Russia. The only mechanic was the blacksmith, one to a village or, sometimes, one to two or more villages. One or two agronomists served a whole country. And not every village by far had a teacher.

Between 1934 and 1937, 1,419,000 tractor drivers, combine operators and chauffeurs were trained in the U.S.S.R. for work

in the countryside. In 1938 alone, 31,700 agronomists, melioration experts, stock breeding experts and surveyors—all university or high school graduates—were sent to work in the collective farm villages.

Various courses of study are held in each village, in each collective farm, and in each collective farm brigade. In Nikolayev Region, for instance, there were 20,000 collective farmers in January 1939 who studied scientific agricultural and stock-breeding methods under the supervision of expert instructors ; and thousands of others attended special schools for tractor drivers, combine operators, chauffeurs and drivers of Diesel tractors.

2. The Soviet countryside is covered with a wide network of laboratories carrying on scientific work, experimenting and producing new varieties of plants. The collective farm villages have given the country a number of scientists who are contributing their valuable discoveries to the science of agronomy. T. Lysenko, formerly a peasant of the village Karlovka, Poltava Region, is today a member of the Academy of Sciences of the U.S.S.R., and President of the Lenin Academy of Agricultural Sciences. It was only after the establishment of Soviet power, that T. Lysenko received higher education and took up scientific work. Thousands of collective farmers helped Lysenko in his experiments, which he carried out on collective farm fields. With the assistance of these collective farmers, Lysenko elaborated the theory of the stages in the development of plants, which served as a basis for the introduction of his scientific method of *yarovization*—or “vernalization”—of seeds. In 1933, yarovized seeds were used to sow 494,000 acres of land, and in 1937 they were used on 22,230,000 acres. *Seed yarovization has increased grain harvests by millions of tons.*

Lysenko has many followers and students who are continuing their teacher's bold experiments.

One of his followers, Maltsev, a member of the Zavyety Ilyicha Collective Farm in Shadrinsk District, Chelyabinsk Region, has been carrying on important scientific research work in the farm laboratory. He travelled over a thousand miles to visit Lysenko's Institute of Selection and Genetics in order to get advice on the proper organization of scientific work in the collective farm laboratory. Maltsev succeeded in obtaining about 2,000 ears of "Multurum-321" wheat for the production of a new variety insuring a high harvest yield. This collective farmer has already achieved important results in his scientific investigation.

A new variety of highly productive wheat has been obtained by the collective farmer, Syrovezkin, member of the New Life Collective Farm in Dmitrov District, Moscow Region.

Another collective farmer, P. Yaskin, of the Veysse Collective Farm in the Mordovian Republic, has achieved extra high harvest yields of wheat and hemp as a result of his untiring experimentation. He has established contact with the foremost scientists and visited many collective farms lecturing on his experiences and methods of obtaining higher harvest yields. Yaskin enjoys wide popularity and has been elected Deputy to the Supreme Soviet of the U.S.S.R.

3. Yefremov, a member of the Iskra Collective Farm in Byeloglazovsk District, Altai Territory, is the initiator of a mass movement for record harvests in Siberia. In 1936, he obtained a yield of 2.4 tons of summer wheat per acre, further improving the results of his agronomic methods in 1937 and 1938. Sergeyeva, link leader of the Politotdel Collective Farm

in the Andreyev District of the same Altai Territory, obtained on her section a yield of 2.85 tons of wheat per acre. This record was bettered in the same Altai Territory by Popenko, link leader of the Red Partisan Collective Farm in Slavgorod District, who obtained on his section a harvest of 3 tons per acre.

A text book prepared by Yefremov in collaboration with a friend, the Stakhanovite Chumanov, will shortly be published in the Altai Territory. The people of Siberia elected Yefremov Deputy to the Supreme Soviet of the R.S.F.S.R.

Until quite recently many scientists considered a harvest of 12 to 16 tons of sugar beet about the maximum obtainable per acre. Maria Demchenko, a peasant girl, member of the Comintern Collective Farm in Kiev Region, had her own opinion on the subject. She worked enthusiastically studying the soil and the effect of various kinds of fertilizers on the harvest yield of sugar beet. *As a result she achieved what had seemed impossible, obtaining a harvest of 21.2 tons of sugar beet per acre.* Demchenko's example was followed by tens of thousands of sugar-beet growers in other collective farms. She is profoundly happy to see collective farmers who follow her methods obtaining 24-28 tons, and even as much as 40 tons, of sugar beet per acre.

Demchenko's methods have been widely popularized by the press, as well as by college professors and agronomists. For several years now the Soviet Union holds first place in the world in the output of sugar beet.

Demchenko is now studying in an agricultural college. She has been decorated by the Government with the Order of Lenin, and the people have elected her Deputy to the Supreme Soviet of the U.S.S.R.

The name of Angelina, another woman collective farmer, is also widely known throughout the Soviet Union. She comes of a Greek family of poor peasants. After graduating a school for tractor drivers, she organized women tractor brigades in the Staro-Beshevsk Machine and Tractor Station in Stalin Region. Angelina's brigade displayed remarkable skill in the utilization of tractors, covering 3,957 acres per tractor in a season. Today there are thousands of women tractor brigades working in machine and tractor stations and on collective farms throughout the Soviet Union. Hundreds of young women collective farmers have been setting high records for harvesting with combines. Angelina has been decorated by the Government with the Order of Lenin. She is a Deputy to the Supreme Soviet of the U.S.S.R. and is now studying in the Academy of Socialist Agriculture.

New names are being added daily to the list of heroes and heroines of the collective farm fields. Oskin, a Stakhanovite combine-operator of the Ural-Ilek Machine and Tractor Station in Chkalov Region, working with his brother, also a combine operator on a pair of Hitched "Stalinetz" combines, harvested 13,155 acres in the season of 1938. A number of improvements suggested by Oskin have been introduced in the manufacture of combines.

4. Last year three women flew in a seaplane over the land route from the Black Sea to the White Sea, covering a distance of 1,500 miles. The seaplane was piloted by the woman flyer Ossipenko of the Iskra Collective Farm in Berdyansk District, Dniepropetrovsk Region. Shortly after that, Ossipenko, together with two other women flyers, Grizodubova and Raskova, made a non-stop flight from Moscow to the Far East in the airplane *Rodina*, establishing a new women's international distance record.

5. The status of peasant women in Tsarist Russia, particularly in the national border regions, was actually that of slaves. In the Soviet Union women work on an equal footing with men, participating in the construction of socialist economy, in the advancement of culture and in the administration of the State.

There are 189 women Deputies in the Supreme Soviet—the highest organ of Government authority—of the U.S.S.R. Many of these women deputies are members of collective farms, where they work as milkmaids, tractor drivers, combine operators, etc.

Farajeva—today People's Commissar of Public Health of the Azerbaijan Republic—was formerly a collective farmer. She was sent to a Medical Institute from which she graduated with honours, and received her doctor's diploma. Subsequently, Farajeva displayed extraordinary talent as a leader and organizer.

6. Before the Revolution there was practically no intelligentsia whatever in the villages. Today the doors of schools, universities and academies are wide open to the peasants. Take, for instance, a typical village—Lukashevka, in Monastyrishche District, Vinnitsa Region. During the period of two Five-Year Plans, from 1929 to 1937, this village gave the country 48 teachers, one railway engineer, three flyers, one artist, two doctors, six agronomists, eight tank operators, one procurator, one assistant captain on a ship, 42 tractor drivers, 14 chauffeurs, four combine operators.

There is a village in the Chuvash Republic, called Tyurleman. In the fifty years between 1867 and 1917 this village produced three post-office workers, three telegraph operators and one medical assistant.

During the years following the establishment of Soviet power, 400 peasants of this village have become experts in various lines—teachers, engineers, agronomists, Red Army commanders, foresters, factory directors, surveyors, book-keepers, electricians, mechanics, doctors.

Collective farmers study foreign languages, music, literature. The repertory of the collective farm clubs and theatres includes works of Shakespeare, Molière, Pushkin, and other classics. Kovalev, a stableman in the Voroshilov Collective Farm in Voskresensk District, Gorky Region, is the author of remarkable folk tales and *bylinas* (epic poems). He is a recognized poet and has recently been accepted as a member of the Union of Soviet Writers.

The Dimitrov Collective Farm in the Sorochintsy District, Kharkov Region, has a string orchestra, a brass band and a jazz band. They are all conducted by Yoltukhovsky, a member of the Collective Farm. The brass band plays Beethoven's and Tchaikovsky's symphonies.

The Moscow State Academic Maly Theatre has a branch in the village of Zametchino, Kursk Region. On the other hand, amateur groups made up of collective farmers frequently appear in dramatic, opera, dance and musical performances in city theatres.

The present author has also been awarded the Order of the Red Banner of Labour. As tractor driver in the Kanelovo Machine and Tractor Station, Krasnodar Territory, I covered in a season 12,350 acres of land, working on a caterpillar tractor. I took first place in an All-Union contest for the highest rate of tractor utilization.

The working people of the Kuban nominated me as candidate during the elections to the Supreme Soviet of the

U.S.S.R., and I was elected Deputy to the Soviet parliament. As deputy I maintain the closest contact with my electors.

At present I am studying in the Timiryazev Agricultural Academy. My ambition is to become an agronomist, and then a professor. But I have not abandoned my tractor and my Machine and Tractor Station. For the summer vacation I shall return home, to my Cossack village, where I shall again drive a tractor and do everything in my power to help the young men and women tractor drivers improve their work.

Considering the conditions of collective farm life, there is nothing extraordinary about my career. Thousands of men and women collective farmers are following the same road. Emancipated from the yoke of the capitalists and landlords, and united in collective farms which use the modern machinery, the peasants of the U.S.S.R. have obtained the opportunity for developing their talents and abilities. Together with other working people, they sit in the highest organs of the Government.

Men and women who but yesterday were collective farmers are today members of the Academy of Sciences, professors, engineers, doctors, musicians, artists, flyers, Heroes of the Soviet Union, or members of the Government. The widest opportunities are open to every citizen of the Soviet Union.

PART V

SOVIET RUSSIA, 1940-43

NATIONAL ECONOMY

BY

N. VOZNESENSK

1. Increased output. 2. Capital investment. 3. Pay-roll.
4. Railway freight. 5. Agriculture. 6. Transport services.
7. Social wealth. 8. Cultural progress.

The National economy of the U.S.S.R. is developing systematically in accordance with the laws of extended socialist reproduction, which implies, first and foremost, a steady growth of production in all branches of the national economy.

1. In the first three years of the Third Five-Year Plan, the industrial output of the U.S.S.R. increased from 95,500 million roubles in 1937 to 137,500 million roubles in 1940, or by 4 per cent. This includes an increase in the output of the machine-building and metal-working industry by 76 per cent.

In respect of the output of the defence industry, the Government was guided by a simple truth, namely, if you want to be prepared for any 'surprises', if you do not want our people to be caught unawares, keep your powder dry and do not stint means on the production of aircraft, tanks, armaments, warships and shells. "The output of means of production in industry in 1940 increased by 13.8 per cent as compared with 1939, and by 52 per cent as compared with 1937. The output of articles of consumption increased in 1940 by 7 per cent as compared with 1939 and by 33 per cent

as compared with 1937. The increase of production in the Soviet Union was accompanied by a reconstruction of industry, especially of the machine-building industry, for the purpose of producing the most advanced and up-to-date equipment needed by the national economy and for the defence of the country.

2. Extended Socialist reproduction further implies a steady increase in socialist accumulation, which is above all apparent in the level of capital investment. Total capital investment in the national economy of the U.S.S.R. amounted in 1940 to nearly 38,000 million roubles (including about 6,000 million roubles of decentralized capital investment).

During the first three years of the Third Five Year Plan, the volume of capital investments in the national economy of the U.S.S.R. totalled 108,000 million roubles (including 17,500 million roubles of decentralized capital investment).

During the first three years of the Third Five-Year Plan State industry (not including district industry of a local character) was reinforced by the putting into operation of about 2,900 new mills, factories, mines, power stations and other plants.

Let me remind you that throughout the whole period of the first Five-Year Plan a total of 1,500 new industrial plants were put into operation in the U.S.S.R.

The effect of the new plant put into operation in the first three years of the Third Five Year Plan has been to increase the capacity of the coal mines by 51 million tons, the capacity of the power stations by approximately 2,400,000 kilowatts, the capacity of the blast furnaces by 2,900,000 tons of pig iron, the capacity of the cotton textile mills by about 1,000,000 spindles, besides other production capacities.

Extended socialist reproduction in the U.S.S.R. further implies a steady rise in the material standard of the working people, an increase in their consumption.

The absolute increase of the national income in the first three years of the Third Five-Year Plan, calculated at fixed prices, amounted to 29,500 million roubles, the rise being from 96,000 million roubles in 1937 to 125,500 million roubles in 1940.

3. The aggregate pay-roll in the national economy of the U.S.S.R. increased, in the branches of industry envisaged in the Third Five-Year Plan, from 82,200 million roubles in 1937 to 123,700 million roubles in 1940, or by 5 per cent.

The monetary incomes of the collective farms increased from 14,200 million roubles in 1937 to 18,300 million roubles in 1939. Preliminary data for 1940 indicate a further considerable increase in the incomes of the collective farms in money and in kind, as compared with 1939. State and co-operative retail trade increased from 126,000 million roubles in 1937 to 174,500 million roubles in 1940.

Thus, in spite of the hostilities on the frontiers of the Soviet Union in 1939 and the beginning of 1940 the national economy of the U.S.S.R. has, in the past year, made a big stride towards the fulfilment of the Third Five-Year Plan, confidently gaining momentum from month to month.

Of the results for 1940, special mention should be made of the beginnings of a considerable increase in the smelting of metal and the extraction of fuel. Towards the end of 1940 the average daily output of pig iron had increased to 46-47,000 tons, as against 40,000 tons at the end of 1937. The daily output of steel increased to 58-59,000 tons as against 50-51,000 tons at the end of 1937.

The daily output of coal in the mines of the People's Commissariat of the Coal Industry had increased by the end of 1940 to 467,000 tons, as against 370,000 at the end of 1937. The average daily output of oil and oil-gas at the end of 1940 had risen to 97-98,000 tons, as against 84-86,000 tons at the end of 1937.

4. Speaking in terms of ton-kilometers, railway freight carriage increased from 392,000 million in 1939 to 409,000 million in 1940 ; while, river-borne freight increased from 34,600 million in 1939 to 36,000 million. However, there are grave defects in the work of the railways ; we still have irrational carriage of freight, which places an unnecessary burden on the railways, while the restricted traffic capacity of a number of sections and lines has not been eliminated.

There has been an increase in the gross harvest of grain, sugar beet, sunflower seed, potatoes and vegetables. The grain crop of the U.S.S.R. in 1940 amounted to about 7,300 mililons poods.

In 1940 the increase in livestock in the collective farms was : large horned cattle by 12 per cent, hogs by 15 per cent, sheep by 25 per cent, and goats by 34 per cent. Socialized collective farm animal husmandry is confidently increasing its share in the total head of livestock of the country.

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5. To pass on to the subject of agriculture the year 1940 was marked by the further consolidation of the collective farm system and the further progress of agriculture. Of the measures taken by the Party and the Government to consolidate the collective farm system in the past year, the most important are the following :

Firstly, measures to protect the socialized land of the collective farms from being squandered. These measures nipped in the bud the tendency to allow free scope to private property relations in our countryside against which Comrade Stalin had warned the Party ;

Secondly, the adoption of the system of calculating the amount of produce from tillage and stockbreeding to be delivered to the State on the basis of the number of hectares of land in each collective farm. This decision has given a spur to the initiative of collective farmers in developing socialized farming, especially socialized stock-breeding in the collective farms ;

Thirdly, the decision of the Central Committee of the C.P.S.U.(B) and of the Council of People's Commissars of the U.S.S.R. relating to additional payment of the labour of collective farmers in the Ukrainian Republic for increased yields of agricultural and livestock produce.

These decisions and measures are historical in the matter of developing and consolidating the victory of Socialism in the countryside. They are helping to further and strengthen socialist agriculture. The role of planning in agriculture has also been enhanced. The indices of the plan of crop yield and livestock productivity now acquire greater validity in connection with the additional payment of the labour of collective farmers who exceed these indices. Thus planning in agriculture has acquired a tremendous additional force.

6. The present war has revealed the tremendous importance of the transport services to the life of a country or people. No sea power, if it wishes to be independent, can dispense with a highly developed fleet and sea routes. But the U.S.S.R. is not only a sea power ; it is—and this is more important—a big railway power. The importance of railways to the U.S.S.R. is just as great as the importance of a fleet is to a big sea power.

In the last few years the Central Committee of the C.P.S.U. (B) and the Council of People's Commissars of the U.S.S.R. have shown special interest in the needs of the transport services, and have done everything for their improvement. The hostilities in which the Red Army was involved at the end of 1939 and in the beginning of 1940 showed that in spite of individual shortcomings, our railway system successfully coped, and will undoubtedly be able to cope again, with the mobilization requirement of our Red Army.

7. The systematic growth of the national income of our country and hence of the social wealth and the personal consumption of the working people, is due to the fact that new contingents of workers, collective farmers and intellectuals are constantly being drawn into production, as well as to the increasing productivity of labour.

The size of the working class in the U.S.S.R. is growing from year to year. The number of industrial workers and office employees engaged in the national economy increased to 30,400,000 in 1940, as compared with 27,000,000 in 1937. According to the plan for 1941 the number of industrial workers and office employees was to increase to 31,600,000.

The continued development of industry demands the systematic replenishment of the working class with new skilled forces and a proper distribution of labour power among the

various branches and regions such as the interests of the national economy warrant.

In 1940, on the initiative of Comrade Stalin, the Party and Government began to create State labour reserves by training skilled forces of young workers in trade schools and factory training schools.

In 1941 it was proposed to enrol an additional 350,000 new students in the trade and railway schools, and 537,000 in the factory training schools. Already in 1941 socialist industry would be reinforced by 794,000 young skilled workers who had been through the factory training schools.

The steps taken by the Party and Government to create State labour reserves were of fundamental importance in determining the qualitative and quantitative composition of the working class, in further advancing our industry, and in placing the socialist planning of the national economy on a firm footing.

The rising standard of living of the people of the U.S.S.R. was attended by a rise in the level of culture. State appropriations for social and cultural services, which amounted to 35,200 million roubles in 1938, increased to 41,700 million roubles, or by 18.5 per cent in 1940. The draft State budget for 1941 provided for an increase in expenditure on social and cultural services to 47,800 million roubles, 14.6 per cent more than in the previous year.

8. The cultural progress of the peoples of the Soviet Union is indicated by a further increase in the number of school pupils and university students. The total number of elementary and secondary school-children in the school year 1941-42 would reach 36,200,000, or an increase of 3.4 per cent over 1940-41. The number of university students would reach 657,000, or an advance of almost 13 per cent.

The increase in the number of students in 1941 and the growth of the number of engineers and technicians in industry will mark a further step in the cultural and technical advancement of the people of the Soviet Union. The people, their culture and their productive skill, these are the decisive productive forces in our society.

During the period of the Five-Year Plan the Soviet people have advanced immensely in culture and in the acquisition of technical skill. Very interesting in this respect are the figures of the last census in the U.S.S.R.

As you know, the census shows that between 1926 and 1939 the population of the Soviet Union increased by 16 per cent. But just see how fast the forces of skilled workers and intellectuals in the Soviet increased in the same period :

(a) <i>Workers</i>	<i>Increase</i>
Mechanics	3.7 times
Turners	6.8 „
Millwrights	13.0 „
Locomotive Drivers	4.4 „
Plasterers	7.0 „
Tractor Drivers	215.0 „
(b) <i>Intellectuals :</i>	
Engineers	7.7 „
Agronomists	5.0 „
Scientists	7.1 „
Teachers	3.5 „
Physicians	2.3 „

Such are the chief indices of the rising material and cultural standard of the peoples of the U.S.S.R.

(Extracts from the Report made on February 18, 1941, to the Eighteenth All Union Conference of the Communist Party of the Soviet Union.)

SCIENCE AND WAR

BY

BORIS KELLER

1. Lessons of war. 2. Flesh and blood of life. 3. Expedition. 4. Diversity of soils. 5. Care of man. 6. A nation-wide domain. 7. Technique works miracles. 8. Chemistry and plant life. 9. Youth and science. 10. Military links.

On 22nd June 1941 Germany started its invasion against us along an extensive front reaching from the Arctic to the Black Seas. She banked on giving our country its coup de grace by means of a 'blitz' blow, but this has failed. Where is the main key to this unprecedented power of resistance with which the Soviet people met this military invasion on the part of the Germans?

In Tsarist Russia there were sharp contradictions between the country's economic and cultural needs and its extremely backward, reactionary State system. The Tsarist Government persistently retarded the cultural progress of this nation often resorting to means of violence.

In 1913 out of every hundred inhabitants of Tsarist Russia 73 were illiterate. And with all this Tsar Nikolai II inscribed the following words on the report of one of the Governors to the effect that the local authorities (zemstvos) had opened a number of village (elementary) schools—"Unnecessary haste by no means desirable" and underlining the last four words. In his recollections, Vitte, the Tsarist minis-

ter, states that on one occasion the Tsar let drop a characteristic phrase : " Intellectual—how repugnant this word is to me."

1. Writing of the experience of the First World War, Lenin said that the war brought many lessons with it, not only to the effect that people suffered but also to the effect that those possessing the great technique, the best organization and discipline and the best machines gain the upper hand. . . . Lenin then went on to say that one must come to learn that without machines and without discipline it is impossible to live in contemporary society . . . that one must either master the highest technique or be crushed.

Speaking of Lenin, Stalin said that in its development science knows of many a man of courage who was able to break up the old and to create the new, irrespective of all obstacles and despite everything. Stalin went on to say that he would like to dwell on one such great man who at the same time was one of the great figures of modern times—Lenin, our teacher, our tutor. On the basis of a scientific analysis of Russia's developments, on the basis of a scientific analysis of the international situation, Lenin arrived at the conclusion that the only way out of this situation would be through the victory of Socialism in Russia. Stalin was fully justified when he declared that if the Soviet system has so readily withstood the ordeal and has still further strengthened its rear, then this means that the Soviet system is now the firmest of systems.

What was it that fundamental State upheaval of 1917 brought to our country and which we understand as being the victory of Lenin and Stalin ?

In brief, the answer is as follows.

Applying every effort it could, the Tsarist Government had obdurately counteracted against the economic and cultural growth of Russia. The new Soviet system ensured our country gigantic, almost headlong, progress and flourishing of all its productive forces coupled with a fabulously quick and mighty creative advancement of its people. Lenin's and Stalin's victory shattered that thick, heavy and national oppression suffered by the peoples of Tsarist Russia, by its working population. Their victory unlocked and set in mighty, ever accumulative motion that truly inexhaustible fountainhead of gold—the talents and abilities hitherto latent in the numerous nations and nationalities of our country which so vastly abound in the many-millioned masses of the people.

2. Science has really become the very flesh and blood of life and has been turned into an actual component part of the Soviet people's every day life.

“Science is generously being introduced into the life of our country, generously, to the utmost degree,” wrote the great Academician Pavlov.

It can be confidently ascertained that all our state systems represents the stupendous realisation and confirmation of the scientific theory for the first time in the world.

But the Soviet Russia does not simply acquire science. It creates it, develops it on an unprecedented scale and not only gives science vast quantitative growth, but also gives it special properties thanks to which science acquires tremendous influence on all aspects of the people's life and work. Science in the U.S.S.R. has been placed on the path of a vast scale State planning work.

To help readers appreciate the scope of this work I shall confine myself to adducing one instance, taken from the particular domain of science in which I work.

In 1918 Lenin wrote his Outline Plan of Scientific-Technical Work for the Academy of Sciences. Among other major national economic tasks, in this Outline Lenin raised the problem of utmost ensurance . . . of means of independently providing the country with all main kinds of raw materials and industries.

3. And here these tasks have been accomplished under the leadership of Stalin. One sixth of the globe's land surface—the Soviet Union—has been criss-crossed by thousands of scientific expeditions which have explored and prospected from the icy expanses of the Arctics and rearing snow-capped mountains in the North to the arid deserts and humid sub-tropics in the South. Travelling on all conceivable conveyances—dog-teams, reindeer-teams, on camels, on board icebreakers, by aeroplane, these innumerable groups of scientists penetrated to the most inaccessible corners of our country. And these State scientific undertakings brought to light huge richness—petroleum, coal, iron, gold and other non-ferrous metals, potassium and phosphorous fertilizers, etc. etc.—wealth untold. I know of no other such case when a people, in its own direct interests, undertook such widescale systematic planned State scientific prospecting of the entire country in exploring its natural wealth.

The following case in point will serve to show the truly striking results already yielded by this work of prospecting :

In Tsarist Russia the reserves of phosphorites serving as agricultural fertilizer were estimated at 5 million tons. By January 1st 1936 this figure had increased over a thousand-fold, the established reserves in the Soviet Union being placed at 5,296 million tons.

No reserves of potash salts whatever were known in Tsarist Russia, the only known source in the Old World being

that of the Strassfurt deposits in Germany. By January 1st 1936 the established reserves of potash salts in the Soviet Union were found to be 18,462 million tons, and even mathematics is unable to state how the latter figure compares with that of Tsarist Russia, as there is nothing with which to compare it.

And in adducing the most diverse kinds of raw materials and minerals equally striking juxtaposition of figures could be made.

And yet our people by no means consider the scientific prospecting of the country's natural riches as having been completed. With each passing year more and more people are drawn in to this work of prospecting, beginning with young schoolchildren—youthful naturalists.

The White Sea-Baltic Canal, the Moscow-Volga Canal, the Moscow Metro Railway, the flights from the U.S.S.R. via the North Pole and via the Atlantic Ocean, the opening up of the North Pole by the four men of Papanin's wintering party, the heroic voyage of the icebreaker Sedov, the flight into the stratosphere, the draining of the Colchis lowlands, the building of the Ferghana irrigation canal . . . the work which was recently completed and which would, once and for all, eliminate drought by irrigating the Lower Volga regions. These are but a few of the separate examples of major Soviet undertakings—enterprises which were inspired by Stalin and in which Soviet science grew and extended. The erection of numerous new works and mills, great power plants, the tremendous progress of agriculture. . . . In a word, science is ever fuller and deeper embracing literally all aspects of the Soviet people's life and work which is developing on an unparalleled scale.

Foreign scientists had the opportunity of widely acquainting themselves with the scope of this work when they attended the three big international scientific congress convened in the U.S.S.R.—that of Soil Scientists in 1930, the Physiological Congress in 1935, and the Geological Congress in 1937.

4. There is a rich diversity of soils in the Soviet Union and soil research is widely undertaken by many State research institutes of the U.S.S.R., this particular domain of science having been highly developed. Generous State support has been extended to new schools of science in the sphere of soil research and agrochemistry—those of Dokuchaev, Williams, Gedroits and Pryanishnikov, whose scientific achievements today find wide practical utility in Soviet agriculture.

The 1935 Physiological Congress showed the exceedingly high level to which Soviet medical science has attained and its vast work in protecting public health. And in the Patriotic War being waged today our medical personnel is doing its utmost to place itself and medical science as near as possible to the combatant in active service. Blood transfusions and other modern methods employed in Soviet surgery have proved themselves true miracles of science and skill, saving the lives and health of many a gravely wounded man.

I shall not overburden the present essay with figures showing the great increase in number of scientific institutions and scientific workers in the Soviet Union as compared with Tsarist Russia. In our country the increase in the number of workers in the field of science, as in all other branches of work, is not restricted by unemployment—a social evil which is infeasible in the U.S.S.R. And the prospects of scientific progress in connection with the continued development of economy and culture in our country are practically unlimited.

But to serve as an instance, I shall dwell on the huge growth which the Soviet Government has ensured for that Chief Headquarters of Soviet science—the Academy of Sciences of the U.S.S.R.

There was only one Academy of Sciences in Tsarist Russia which, in 1917, numbered about forty regular members. These academicians worked in old St. Petersburg in a segregated manner, each in his own small study or laboratory ; they were utterly apart from the people and were almost wholly unknown to the latter.

Since the establishment of Soviet power three national republican academies of science have been founded and made considerable progress—those of the Ukraine, Byelorussia and Georgia. Another Soviet established institution which has made vast progress is the Lenin Academy of Agricultural Sciences. The old Institute of Experimental Medicine has been turned into the Maxim Gorky All-Union Institute of Experimental Medicine and has, to all intents and purposes, acquired the nature of a real academy of medical sciences. Many new military academies have likewise been set up.

By 1941 the Academy of Sciences of the U.S.S.R. itself numbered 119 regular members and 182 corresponding-members. But most striking of all are those qualitative changes that have taken place here as compared with the erstwhile academy of Tsarist times.

The latter entirely lacked such branches as technical, agricultural and medical sciences, which the Tsarist Government evidently regarded as inferior fields of knowledge.

An important Department of Technical Sciences has been established in the Soviet Academy, this Department today numbering 25 academicians. Soviet days saw the election of such famous exponents of agricultural sciences as Williams,

Gedroits, Lysenko and Tsitsin, who were all elected regular members, while Ivan Michurin was elected honorary member of the Academy.

5. Medicine has received truly magnificent development in the Soviet Union, where care for Man stands first and foremost. And at the last elections to membership of the Academy, in January 1939, Soviet medicine found itself represented by a brilliant group of 9 regular members and 10 corresponding-members—all brilliant savants of the old and the new generations. On this occasion, for the first time in its history, the Academy elected a woman as regular member—Lina Stern, who has founded her own school in the field of physiology of men. For their outstanding achievements in public health protection and in the country's defence, 15 of these newly elected members have received the title Merited Scientist, while 8 have been awarded orders of the Soviet Union.

In general, the very type of scientist has fundamentally changed in the Soviet Union. Applying the remark made by Marx, it can be said that in Tsarist Russia savants were like philosophers who merely, by different means, tried to explain the world, while in the Soviet Union the scientists are called upon to work energetically to change the world. In the Academy of Sciences' ranks there appeared new academicians, organisers and builders of great works and mills, builders of huge structures, in the erection of which they accomplished a great deal of scientific work. There appeared new Academicians—engineers, who were elected into the Academy not by dint of their printed works, as was of necessity the case in old times, but through their fruitful constructive labour. Here too we have many instances of the remarkable progress of the people, for example, the deceased Soviet Academician Alexandrov, an engineer who, in Tsarist times built many

small bridges and dams in the former Tambov Gubernia. The Soviet Union entrusted Alexandrov with designing the project for the Dniپر Hydro Power Plant, and this undertaking alone was sufficient to advance Alexandrov into the ranks of Academicians.

The Dnieپر construction undertaking resulted in three Soviet Academicians in the engineering world—Alexandrov, Vedeneyev and Vinter. And it is to be remembered that the Soviet Union numbers many similarly huge enterprises of all sorts.

The year of 1934 witnessed an important event in the history of the Academy of Sciences—at the proposal of Stalin the Academy was transferred from Leningrad to Moscow.

For more than two centuries the Academy of Sciences had remained in its former place and it seemed as though it had grown rooted there for ever. The idea of transferring the Academy from Leningrad to Moscow and bringing it nearer to the Government centres pursued the aim of further drawing in the Academy to constructive State work, to help it better and fully serve the interests of the people. This aim has in many respects already been attained and is continuing to be effected.

But the transfer of the Academy to Moscow by no means confined its activities to the capital. On the contrary, the Academy grew into a powerful system of scientific institutions, branches and bases of which are to be found all over the Soviet Union.

An important task falls to the lot of the Academy of Sciences' affiliates in those Union Soviet Republics which as yet do not have their own national Academies of Sciences. These branches of the Academy of Sciences of the U.S.S.R. exist in the Azerbaijan, Armenian, Turkmenian, Uzbek and

Kazakh republics. Each such branch represents the beginnings of a future national Academy of Sciences and helps considerably in training national scientific personnel. The former Academy of Sciences Branch in Georgia, for instance, has now been established as the Georgian Academy of Sciences.

This system of affiliation is most expedient under wartime conditions. In those most anxious days, when in Moscow and Leningrad all thoughts centred on the urgencies of military defence, the Academy's Branches developed scientific work to help the front and rear.

Generally, there was not a single branch of our science which was not re-set on a new footing and which did not give most essential aid to its people in their fight against the enemy. And in this work science was waging the struggle of its people its own struggle, a fight for its own unhindered existence which is threatened with destruction.

The award of Stalin Prizes eloquently speaks of the fact that in the present Patriotic War Soviet scientists have in practice proved themselves ardent patriots and have more than justified that faith and esteem, that exceptional solicitude which the Soviet people manifests towards science.

6. Stalin said that there are cases when new trails in science and technique are sometimes blazed not by men universally known to science but by men wholly unknown in the world of science, simple men, men of practical experience, innovators.

As instances of such simple people, men blazing new trails in science and technique, Stalin adduced Stakhanov and the Stakhanovites and Papanin and his wintering party. In our country science does not only serve its people, but in itself arising from the people it forms the domain

of the latter. That is why in our country simple men, innovators of practical experience have such wide opportunities and favourable conditions for taking broad part in scientific progress.

Speaking at the graduation meeting of Red Army Commanders who had finished studies at the military academies, in May 1935 Stalin said that technique without people who had mastered it was lifeless but that technique headed by men who had mastered it can and should work miracles.

7. Four months after Stalin had spoken these words, and in response to his appeal, technique, as headed by men who had mastered it, really began working miracles.

The Stakhanovites have become the constant motive power of Soviet science and technique. Stakhanovites do not allow science to rest in its tracks, they are incompatible with stagnancy, they beckon and lead on to new and daring achievements.

The Stakhanov movement thereby promotes the cultural and technical growth of the working class and hence eradicates the line of demarcation between mental and physical work.

The nationwide scientific movement among our collective farmers is worthy of particular attention. How unspeakably remote from science was the impoverished, illiterate mass of multi-millions of peasants in Tsarist Russia! In those years I was professor at the higher agricultural school in Voronezh. We had excellent (for those days) scientific studyrooms and laboratories, valuable brand-new scientific equipment, experimental fields of fertile black-earth soil. And almost at the very gates of the school lay spread a veritable ocean of overwhelming peasant poverty. And we with our high culture were segregated from the demands and needs of the people.

Our collective-farm peasantry knows of no poverty and illiteracy. The number of millionaire collective-farms quickly grows. Scientific production-centres have been established in collective farms all over the country—collective-farm laboratories which organize, raise and gather that most valuable of all harvests—creative research of the collective farms.

I must apologise to my reader, but here I feel that I must digress for a moment and dwell on my own association with collective farmers on the basis of science.

8. Here is one of these auditoriums—a very big one indeed. I wrote two booklet-lectures for the Collective-Farm Correspondence Courses. One of these was What is Chemistry and the other Plant Life. In Moscow Region alone 100,000 collective farmers, men and women, learned from these booklets and passed their examinations on the basis of what they read therein. With the object of making closer acquaintance with this vast auditorium and its successes I undertook trips to various district centres of Moscow Region where my new students would foregather for their examination conferences. And at these conferences my heart—the heart of a scientist—was filled with great pride and joy for my Soviet fellow-countrymen and for the future destiny of science in the able hands of these people. A whole volume could be filled in writing of the remarkable progress made by all those whom I met at these conferences.

Here is the chairman of a collective farm undergoing examinations in chemistry. I am present while he gives a genuine lecture, like a true professor ably conducting experiments and smoothly writing out formulas on the board. Everything in the manner of this collective-farm chairman spoke of the professor—the way he handled the appliances, his manner of speech and writing. In a surprised undertone I asked my

neighbour—a local agronomist—what education of this splendid reader of chemistry. The reply was “The chairman of our collective farm attended elementary school in Tsarist times but had no chance of finishing even this. As a young man he saw active service, fighting for the Soviet power. And today he is successfully making leeway in his education.”

Among my numerous collective-farmer students—men and women—were many who were up to seventy years of age, and even over. One of my pupils, for instance, was old grandma Avdotia Yegorova, who declared “I’ll soon turn ‘chemistry’ myself, but still I’ll learn chemistry properly.” And this she did, passing her exams with “excellent” ratings.

Here are some characteristic excerpts from letters of my collective-farmer women pupils.

“Life has ceased to be tedious, it has become filled with studying. I want to know more and more and to apply my knowledge in practice. I feel like crying out to all collective-farmers to learn, to study so as not to work their collective fields in a blind manner.”

These words were written by Sitnova, who is 35 years old. She is head of a vegetable-raising team. In Tsarist days she attended elementary school for only two years, but today she is studying and has passed her exams in chemistry, plant life, etc. with good ratings.

The 1939, 1940 and 1941 U.S.S.R. Agricultural Exhibitions in Moscow splendidly portrayed the vast progress of the nationwide scientific advancement in Soviet agriculture and showed how greatly it had increased our agricultural production. At the same time the exhibition in itself vastly promoted further progress both in scientific achievements and increased agricultural output.

In brief nationwide advancement of science proceeds to-day in all fields of economy, culture and defence of our country.

9. In one of his addresses Stalin advocated that science, which understands the meaning and significance of the all-powerful union of old scientists with young workers in this domain, that science which readily and willingly opens wide all its doors to the young forces of our country, which gives them all opportunity to win to the peaks of science and which recognizes the fact that the future belongs to youth in science.

As its heritage to the Soviet Union, Tsarist Russia left a comparatively small stratum of intellectuals, and the main mass of today's intellectuals, have advanced since the founding of Soviet power.

The body of Soviet intellectuals has not only grown on account of the big and constant influx from Soviet youth but also as a result of the vast creative advancement of the older generations too—a progress which took place in actual production work.

The thousand-year-old line of demarcation between physical and mental labour is being eradicated in our country. Mental labour is becoming an inherent need of every person in the country.

10. I would now like to touch on another of my auditoriums—that in the military sphere. Particularly strong and lastingly vital links of friendship bind us scientists those studying in the sphere of military knowledge. Upon the initiative of its members, the trade union of higher school and scientific institute workers has undertaken constant patronage over the Red Army and Red Navy in the domain of

science. In addition to direct scientific assistance in our country's defence, this patronage likewise finds expression in another way—every year thousands of papers and lectures to various military units. These lectures cover all branches of scientific knowledge and special subjects, including also literature, history and philosophy.

Science in the Soviet Union broadly merges with the army where it truly flourishes.

During the first ten months of war the wealth of creative thought in the U.S.S.R. reached unparalleled scope, covering all fields of science, technique and art. And this vast progress was inspired by the mighty task the country today has in hand. And witness of this progress in all branches of knowledge is to be found in the award of Stalin Prizes. This event also testified to many other achievements. Under war-time conditions the road between creative research work and its realizations in practice has been greatly shortened.

Neither has the war put a stop to the thorough elaboration of the theoretical foundations of science and technique. There is today not a single speciality in the fields of science, technique and art which has not found its true place in the common cause of our country's defence. And everybody enthusiastically takes part in this work—eminent scientists, academicians, professors, engineers and technicians—aged men renowned in the world of science and youthful newcomers to this domain.

SOVIET ASIA—THE RUSSIAN TREASURE HOUSE.

1. Transplanting key industries. 2. The Republics.
3. Big cities spring up. 4. Children's homes. 5. Equal partners. 6. Mass Migration.

Beneath that immense and varied landscape nature has hidden uncounted riches, the best resources in the Soviet Union. All kinds of minerals, including coal and iron ore found throughout Siberia. There is plenty of water power and millions of square kilometers of standing timber. The whole forest reserve and much of the tundra zone of the present Soviet Union now lies in Asia.

Regarding natural wealth in the European Urals, few people realize that on their eastern slopes, where Asia begins, are perhaps even fatter resources. Here also is an impressive scene of effort by Soviet engineers and builders. And still further, in Siberia, the war is speeding construction of several other self-contained industrial bases in an equally phenomenal way.

With the loss of the Ukraine, the Kuznetsk-Kuzbas—coal basin became the greatest producer in Russia. Its rich seams contain six times more coal than the Donbas itself. In Kuznetsk, the Russians claim to have built the largest metal works in the world. Siberia likewise boasts the largest iron and steel works in Russia and the largest blast furnace in Asia or Europe. One Kuzbas plant alone makes more than 1,000,000 tons of steel a year.

1. The foresight embodied in the Third Five-Year Plan has greatly simplified the task of transplanting to Asia certain key industries during the present war. Because the plan prohibited building more new enterprises in Moscow and Leningrad, as well as in Kiev, Kharkov, Rostov, Gorki and even Sverdlovsk in the Urals, the largest possible percentage of building materials was diverted to eastern and far-eastern districts. There, duplicate shops were created in a number of key machine-building, oil-refining and chemical industries. A third of all new iron and steel factories were planned for eastern districts, and three quarters of the new Soviet blast furnaces also. With the approach and reality of war, these proportions doubtless were immediately raised.

Double-tracking of the Trans-Siberian Railway has been followed by other construction, including further work on the Turksib Railroad, which connects Central Asia with the Urals and the Far East. The 1000 kilometers of single and double track railway originally scheduled in the Third Five-Year Plan are in use. Improvements on the northern sea route are also giving better communications with the Orient. Power plants, cement factories and truck plants—all these are operating as planned, along with many new light industries.

Machine-tool plants are now working in Vladivostok, Irkutsk, Krasnoyarsk and even in Ulan Ude, the capital of Buryat-Mongolia. Aircraft are coming out of Tomsk and Irkutsk. The fine steel of the east is made into fine tanks in the east—not only for shipment westward. Hundreds of millions of tons of tinned fish, mountains of fur hats and coats are pouring to the Red army from the far-eastern territory. The latter is farther from Moscow than America is from England, but the Far East has everything it needs to become industrially self-sustaining, and it is rapidly becoming so. With the help of Central Asia, Siberia could already

maintain a separate fighting front of its own. Down in Central Asia, too, every industry is developed. Open-hearth furnaces are already working, and blast furnaces are being prepared for modern autonomous industrial centres. Stretching from the Caspian Sea on the west to the Altai Mountains on the east, and beginning in the north at the Urals to end on the high frontiers of Iran and Afghanistan in the south, Soviet Central Asia includes half a dozen republics, which, all together, are bigger than British India.

2. Image-provoking names they have : Uzbekistan, Samarkand, Tajikistan, Turkmenistan and Bashkiria. A generation ago these romantic lands of steppe and wild mountain vastnesses and the lonely deserts comprising the former Tsarist colony of Turkestan were still largely the domain of the nomad. Today they are already sufficiently changed to succor, with highly effective contributions of men and materials, the cause of Soviet arms.

Bashkiria, with its "second Baku", and new oil wells sunk at Fergan, Bukhara, and in the Kirgiz and Turkmen republics give promise of Soviet oil production which might eventually equal America's. The Karaganda coal field in the steppes of Eastern Kazakhstan is now the second largest in Russian hands. It furnishes the bulk of coking coal needed by the industry of the Urals. Central Asia also supplies all cotton used in the U.S.S.R. and nowadays its own mills produce its own textiles. Formerly all cotton was hauled 2000 miles to Moscow and Leningrad.

Kazakhstan's meat industry—a decade ago it hardly existed—accounts at least in part for the high morale of the Red soldier. It has improved his diet by giving him tasty meat instead of the old ration of dried herring.

3. *The great cities and indeed virtually new nations grew from the wilderness. It is said that more than 100 towns of over 100,000 each have arisen since the revolution. That would mean that about 10,000,000 people have been uprooted and resettled in a couple of decades.*

Karaganda, for example, did not even exist a few years ago. It now has a population of about 200,000. Stalinsk, as recently as 1936, had only 3,800 souls, but is now an important Siberian steel center about as large as Karaganda. Novosibirsk quadrupled in three years. Tashkent quintupled in little more than a decade, and today is a metropolis of more than 1,000,000 people.

In strange ways the war is helping the people of all these regions, as refugees from Europe, together with the factory workers, pour in from the west. The migratory wave at present is greater than at any time in the past, and millions of hectares of new land are being tilled in Siberia and the Soviet north. A vast acreage is also being reclaimed in Central Asia as well.

In Uzbekistan, for example, more than 1,000,000 acres were last year stolen from the desert to be transformed into fertile farm lands—enough new soil to make this Republic self-sufficient in grain. In 1942, despite the war, the Soviet Union graduated 75,000 new engineers, scientists, technicians and agronomists, and many of them were Asiatics. But the remarkable thing about wartime construction in Siberia and Central Asia to date is that it has mostly been done by people who never before were builders. Uzbekistan irrigation projects were built by old farmers and women and children, led by young graduates from the local trade and engineering schools. They transformed Uzbekistan from an agricultural, pastoral country into a state whose production is already 75

per cent industrial. Meanwhile it continues to supply most of the wool and silk in Russia. Translated into war terms, that means it keeps the Red Army warm and the Red air force supplied with parachutes.

Industrialisation is spilling into the neighbouring agrarian republics, notably Tajikistan and Turkmenistan. Even little Kirkhistan, lying on the Tien Shan, bordering Sinkiang,, is yielding up its coal in the cause of war and sending its sons to the front. The Tajik Republic, bordering on Chinese Sinkiang and Afghanistan, formerly was only an isolated frontier which landlocked Russia behind the high barriers of the Pamirs. Now railways and road reach in to bring its cotton to the white buildings of Samarkand, where mills hum across the street from the blue-domed Gur Emir masoleum in which Tamerlane lies enshrined.

Another surprising thing is the way Asia's youngest people have been mobilised, largely by youth itself, to do the serious work of war. In Uzbekistan alone 400,000 school children worked in the fields in 1942, sowing and reaping grain and cotton.

4. In Tashkent alone are fifty-seven children's homes for 40,000 infants from the areas of the front line. Thousands of other war orphans have been legally adopted by Asiatic families—sometimes three or four to a single home. Many of these little Russians and Ukrainians will grow up to speak Uzbek, Kazakh or Kirghiz as well as Russian. Many doubtless will remain and eventually marry into the brown-skinned races, as thousands of Russians have already done. There is an almost complete absence of color prejudice here—at least regarding Asiatics—which doubtless explains some of the success this Government has had in enlisting aid for the war.

Nothing would be more interesting than the explanation given by a Kazakh, representing the largest of all the republics of Soviet Asia. He is called Sharibov, and Sharibov's own story is partly an answer. His father was a poor fisherman on the Caspian Sea, and in his youth Sharibov was a fisherman too. For a while he worked in a factory. He never entered school until he was sixteen, but then quickly mastered his own written language as well as Russian. He became a teacher; soon he was elected chairman of the district executive committee. In 1939 he became a member of the Kazakh Government in Alma Ata. A year ago he was very much the efficient executive, ensconced behind a huge carved desk equipped with a battery of dial telephones and a statuette of a galloping Cossack. At the age of thirty-seven this ex-fisherman was the chief representative in the All-Union Government of the Republic.

5. *"Distances separating friends and enemies are unimportant in this war", observed Sharibov. "The Soviet Union is a big family and the important thing is that we Kazakhs are equal partners in it. When one house of the family is invaded, it's the same as if it happened to all of us. We could not remain aloof and still believe that we had a right to survive."*

Kazakhs have the same rights as any other people in the Soviet Union. Their nation is not discriminated against. Kazakhs have made great progress in the last 20 years with the help of Russians. Kazakhstan was only a colony before, but now Kazakhs have their own elected local and national governments. They have trained, educated Kazakh leaders in charge of their own affairs. The majority of both the Government and the Communist Party are Kazakhs.

Before the revolution Kazakh national culture was suppressed and the Russian language was forced on the country.

To-day, Kazakhs have opera in their own language and their own music and literature. Some Kazakh opera stars and ballet dancers are leading artists. They are among the most popular sincema stars in Russia.

6. It is indisputable of course, that Russia is not only a great power in Europe and potentially the greatest of all European Powers—she is also an Asiatic Power. Russia's Asiatic territories are more than twice the size of the whole of Europe, and Russia's interests in Asia are far larger than American and British interests combined.

Ever since 1927, the Soviet Union has been extensively developing its holdings in Asia, and appropriating a large share of the Russian national income for the creation of powerful Far Eastern armies, well equipped with tanks and bombing planes. By constructing armament factories in the Far East, the Russians have done everything possible to make these armies independent of supplies from European Russia.

This settlement and development of Asiatic Russia, which the Soviet Government has been systematically stimulating for sixteen years, was vastly accelerated by the German invasion of Russia in 1941.

The dramatic military events of that attack have distracted the attention of the world from one of the greatest mass migration in history, as the Soviets have moved millions of her people out of the German-occupied territories of European Russia into the wide-open spaces of Asiatic Russia.

Few outsiders have appreciated the significance of a Soviet decree that these evacuated citizens shall be permanently settled in their new Asiatic homes. Moscow has instructed these people not to think of returning, after the war, to their former homes in European Russia.

This decree was a logical step in the programme of colonization and industrialisation of Asiatic Russia which was laid down in 1927. It reveals that the Soviet Government intends to utilize the war to speed up this programme. It suggests that the Russians are just as determined to safeguard their position in Asia as they are in Europe.

With all the suffering, and hardship, the country east of the Urals still looms as a *Promised Land* to the Russians. Vast, sparsely peopled, and fabulously rich, it has drawn Russians eastward since the fifteenth century. When the Reds launched their Third Five-Year Plan in 1938, they decided to locate it in the *Promised Land*.

Thus, when invasion came, the Russians already had a skeleton industry spread thinly over the face of Asiatic Russia. This industry was now merged with the evacuee plants from European Russia. Oil-drilling equipment from the last Maikop fields went to the new oil fields at Emba and the "Second Baku" just west of the Urals. Donbas workers were sent to the rich Karaganda coal mines. Ukraine textile mills turned up near the cotton fields and handlooms of Kazakhstan.

By this process of merger and transplantation, three great industrial centers were developed: in the Urals, in the Kuznetsk Basin (Kuzbas), and in the rich Soviet Asiatic republics, which cluster east of the Caspian Sea in the region formerly called Turkistan. Smaller centers sprang up in the Irkutsk area, in the Soviet Maritime Province, and elsewhere in Siberia.

The Urals: This is still the industrial backbone of the *Promised Land*, though other regions are quickly catching up with it. Most of the Russian guns, tanks, and planes:

after the occupation of Western industrial armament centres are made here, plus tractors, locomotives, and machine tools.

The Urals also produce iron, ferro-alloys, copper, gold, asbestos, platinum, potash, zinc, nickel, and aluminium.

The heart of the Urals is the city of Sverdlovsk, whose population has soared from 140,000 in 1926 to well over half a million today. Sverdlovsk is the iron capital of Russia. It is the site of enormous Uralmashtroi (Ural Machinery Building Works) whose tens of thousands of workers today produce only munitions and dies for munitions making. It is also the pivot of seven major railways. Magnitogorsk is Sverdlovsk's rival. Built atop a great deposit of magnetic iron, it centers around a great steel plant, one of the world's largest. In 1926 Magnitogorsk was a hamlet. Today its population well exceeds 150,000.

Chelyabinsk, the third major Ural city, lies in the centre of the nickel and copper country. Its tractor plant, which once turned out 40,000 tractors a year, now builds tanks. It has a huge zinc smelter, an aluminium plant, and machine-tool works.

Kuznetsk Basin: Here, the Russians believe, lies the richest sector of Asiatic Russia. Its coal reserves are five times those of the Don Basin. Its iron is inexhaustible. It has gold and lead, silver and zinc, copper and manganese. Industrially it is nearly self-sufficient. Moreover, together with Karaganda, it supplies the coal used by the fuel-hungry plants of the Urals. Kuzbas's expansion has been tremendous. Novosibirsk, its capital, has more than quadrupled its 1926 population of 120,000. Stalinsk grew from 4,000 in 1926 to 170,000 in 1939. Leninsk, from 20,000 to 82,000; Barnaul, from 74,000 to 148,000.

4. **Turkistan:** This area, bordering on India, includes the Kazakh, Turkmen, Uzbek, Tadjik, and Kirghiz Soviet republics. A bare decade ago this was a country of sand and illiterate nomads. Today it is blanketed with mulberry trees for silk cocoons, sugar beet and rice fields, textile and silk mills, coal and lead mines, copper smelters and tremendous power plants. It produces oil, salt, iron, tungsten and molybdenum. To irrigate its arid, if fertile, soil, thousands of workers had dug the immense northern Tashkent, Sokh-Shakhimardan, and Gissar canals and the Katta-Kurgan reservoir, which together wrested 1,250,000 acres of fields from the sands. In March 1913, ground was prepared for a hydroelectric irrigation project on the Syr-Darya River, destined to have the second-largest output in Russia.

Probably the most important product of this region is cotton and kok-sagyz, a rubber-yielding dandelion. Of Russia's pre-war cotton output of 4,000,000 bales, 70 per cent was produced here. Kok-sagyz is an "evacuee" from the Ukraine and White Russia, although it was first discovered by two young and curious workers in Kazakhstan. In 1942 it was Russia's second most important source of rubber, and more than 2,500,000 acres were planted in kok-sagyz.

Thus the Soviet *Promised Land* is Russia's assurance of continued large-scale resistance, however grave the strain of war. It is also a pledge of postwar strength and growth.

INDUSTRY SHIFTS TO URALS.

BY

BORIS AGAPOV

1. Might of technical means. 2. Dismantling and re-assembling. 3. Planning. 4. Urals grow rich in industry.
5. Oil industry. 6. Science, the key to success. 7. Non-stop work. 8. A girl's example. 9. New innovations.
10. New plants spring up.

Academician Fersman, the prominent Russian geologist, estimated that a modern army of 300 divisions require annually about 35,000,000 tons of steel, about 25,000,000 tons of oil and oil products, more than 200,000,000 tons of coal, about 2,000,000 tons of manganese, about 60,000 tons of chromium ore, 400,000 tons of copper, 3,000,000 tons of lead, 20,000 tons of nickel, 10,000 tons of tungsten, 5,000 tons of molybdenum and scores of other substances in lesser quantities. Of the 94 elements of Mendelyev's Periodic Table, there are no more than 14, that are not of war significance at present.

It is not enough to mine these metals ; they must also be converted into arms with a high degree of precision, and this involves thousands of complex operations on the highly specialized machinery of a modern plant.

Germany had about 240 divisions in the field against the Soviet Union, all of them armed in keeping with the last word in technique ; hence one may conclude that German industry consumes quantities of strategic war materials approximating the above proportions.

1. During the year 1942, the Red Army has not only stemmed the pressure of German armies but also delivered a series of shattering blows to them, which would have been impossible had not the Soviet army possessed the appropriate equipment and armaments. The testimony of German war prisoners strikes a common keynote of fear and amazement at the might of the technical means they encountered contrary to all their expectations, on the Russian front.

It is common knowledge that as a result of her sudden invasion of the Soviet Union, Germany in the first year of the war succeeded in seizing the Ukraine and the Donbas where the basic Soviet industrial centres were located. It might have seemed that this turn in events deprived the U.S.S.R. of her sources of both the strategic raw materials and the finished products required to hold a vast front several thousand kilometers long against an enemy drawing upon almost all of the powerful and long-established industry of Continental Europe. Yet nothing of the kind happened.

Two basic circumstances explain this at first sight inexplicable phenomenon: firstly, the vast amount of effort invested by the Soviet Government on the transfer of industries from the Ukraine, Byelorussia and some regions of Central Russia to the East, and, secondly, the powerful development of eastern industry during the past decade.

Both of these circumstances were supreme tests for the entire Soviet system of economy.

2. To dismantle and load on railway cars, transport for thousands of kilometers and reassemble hundreds of large factories and to do it all within the space of four or five months while superior enemy forces were fiercely driving deep into the country—meant subordination to a single plan

of all fields of human endeavour over a vast area from the Dniester to the Yenisei.

This unprecedented undertaking proved to be feasible precisely because of this single, all-embracing economic plan that had long before been laid at the foundation of the entire Soviet national economy. Its realization involved the greatest of exertion, but it did not entail the introduction of any new principle. The prerequisites for its success had been created in the course of long years of peaceful construction.

The new problems that confronted scientists, engineers and industrial executives in charge of the evacuation were only technical in nature, ranging from carrying capacity of railways to the time required for dismantling industrial plant and reassembling it, the presence of raw-material sources at the new industrial sites, etc. These factors too depended in certain measure on the organizational ability and theoretical knowledge of the people in charge for they had at their disposal all the transport facilities of the country, they could dispatch labour power wherever it was needed and undertake the development of new mines and oil wells wherever natural conditions permitted.

3. The second circumstance which made it possible to ship Western industry to the East was also the result of planning. The rapidity of industrial development in the Eastern districts during the past ten years was by no means a spontaneous phenomenon. As far back as 1930 a new iron and steel center in the East was projected, an idea that led to the launching of one of the greatest construction jobs ever undertaken anywhere—that of the Urals-Kuznetsk development. This leviathan of industry came to consist of the Magnitogorsk Iron and Steel Works, a reconstructed 2,000 km. railway and iron and steel works of Kuznetsk, the

Kuznetsk coal fields, as well as a large number of the enterprises metallurgical to power, transport and other undertakings. By the beginning of the war, part of this huge project had been realized and the rest was under construction. Hostilities did not interrupt work which has been going on at a constantly increasing pace.

Besides the Urals-Kuznetsk development numerous enterprises of the most diverse types were built throughout the huge territory from Bashkiria to Krasnoyarsk. These enterprises were provided for in the Third Five-Year Plan, *whose salient feature was a new distribution of industry in the eastern part of the country.*

4. This program of industrial action affected the Urals particularly. Next to the numerous old small factories, huge enterprises made their appearance, among them the Urals Heavy Machinery Works, Chelyabinsk Tractor Plant, the Berenzniki and Solikamsk Chemical Works, Krasnouralsk Chemical Works, Krasnouralsk Copper Smelter, the new Zlatoust and Nizhni-Tagil Iron and Steel Works, not to mention scores of others. If Soviet industry as a whole grew 5.3 times during the first two five-year plans, Urals industry increased 6.8 times in the period from 1928 to 1937. By the latter year the output of electric power exceeded the 1917 level 13 times over, with further growth continuing in geometrical progression.

Thus economic planning made possible the exceedingly rapid transfer of industry to the East after the outbreak of war and provided it with factory buildings, ready sources of raw materials and surveyed natural resources.

The Urals which covers a huge territory more than 1,200 km. in length, is rightly considered *the leading producer of armaments in the Soviet Union. Scientists call the region a*

“Geologists’ paradise” The comparatively low mountains separating Europe and Asia are among the oldest ranges on the globe. Millions of centuries worked slowly but surely to prepare them for the prospector and the miner. As a result of movements of the earth’s crust, the action of surface waters and the effect of climatic conditions, an almost incredible variety of minerals ordinarily concealed deep in the bowels of the earth is here to be found close to the surface

Neither of the two renowned mineral areas in the Appalachians in the United States and in the Ruhr in Europe has more than five different useful minerals to offer. This has inevitably led to the one-sidedness of their economic development. In the Urals on the contrary, more than 60 of the known chemical elements can be found in one or another concentration. The catalogue of Urals wealth included about 800 minerals and more than 12,000 deposits.

The mineral map of the Urals is an alluring crazy quilt of diverse geological designations. Before the October Revolution the area was known mainly for its iron ore, copper, gold, platinum and precious stones. During the 25 years of Soviet power, industrial processing of more than 30 chemical elements has been launched, of which 20 were either entirely absent or hardly figured in the former production chart of Urals industry.

During the Five-Year plans large deposits of bauxite were added to the list of the region’s natural wealth. The Krasnaya Shapochka deposits alone produce annually thousands of tons of this raw material for the aluminum industry.

5. Oil is another newcomer in the Urals, where during the five years from 1934 to 1939 more than 10 oil-bearing districts were opened.

Formerly unknown were also its potash deposits, which are 5 to 6 times as great as the previously known world total and which have given the U.S.S.R. first place in the world as regards this raw material. Large deposits of magnesium salts, out of which magnesium, the lightest of all metals is made, were found at Solikamsk.

Extremely important among the discoveries of the past few years is manganese which is now found at 150 points. The iron and powerful steel industry of the area is no longer dependent on manganese brought from elsewhere.

Although it was known before 1917 that the Urals contained nickel, it is only now that large works have been established in the Southern Urals to produce this essential ingredient of high-grade steels.

During the recent period, a number of rare metals have made their appearance in Urals industrial production, among them titanium, cobalt tungsten, beryllium, zirconium, cesium, etc.

Almost all of the known chromium deposits in the U.S.S.R. are located in the Urals. The area is of world importance as regards the production of the platinum and asbestos, as well as for its potash, chrome, magnesite and beryllium workings.

The Urals is the *Promised Land* of iron and steel. The region possesses almost all the known types of iron ores, including ores containing chromium, nickel, titanomagnetite, etc. This diversity affords industry a tremendous range of action in the production of various kinds of iron and steel, high grade metal in particular. At present more than 2,000 iron ore deposits have been surveyed. Among the world-renowned areas are the Baikal deposits, which produce high-

grade ore exclusively, and the Magnitnaya Mountain with its enormous reserves cropping up right to the surface, which is being tapped by the open pit method and excavators.

The same can be said of copper, production of which has increased many times over during the last few years.

There was nothing accidental about the discovery of natural wealth and the industrial development in the Urals, for intensive prospecting was launched throughout the area immediately after adoption of the plan for harnessing its productive forces.

6. *Science is one of the prerequisites of the success of any plan.* Hence the foremost scientific forces of the country headed by the Academy of Sciences of the U.S.S.R. were set to studying the natural wealth of the region. Their efforts were augmented by the prospecting organizations of the different industries with their staffs of highly competent experts. For instance the best authorities on oil working with the petroleum prospecting organizations of Baku were sent to survey and study the Bashkirian oil at Ufa. Scientific research institutes were set up on the spot, provided with topnotch equipment for the purpose. All this led to the enumerated discoveries and insured that the planning bodies of the State had at their disposal by the beginning of the war a wealth of material pertaining to the geological and economic possibilities of the area.

When Germany invaded the Soviet Union, the Academy of Sciences immediately reinforced its Urals branch with additional personnel and launched, under the leadership of its president Academician Komarov, a study of all this material in order to give the people in charge of planning a complete picture of the conditions in which the enterprises evacuated to the Urals would find themselves. Simultaneously with

the transfer of these enterprises, their new inter-relations, in other words, the new economic structure of the entire region, were planned in detail.

Today the people of the Urals say that the frontline passes through their open-hearth and blast furnaces, and they act accordingly.

7. During the victorious 1942 winter offensive of the Red Army, a Molotov worker by the name of Gorodilov worked 96 hours straight at his job, knowing that the uninterrupted flow of parts to the assembly line depended on him. It would have seemed that the human body could not withstand such a strain, but when it was suggested that he should take time for rest, Gorodilov answered :—

"They are advancing for weeks already, but my offensive has been going on for only two or three days."

Another case of fitter Shlepnev who caught a chill at his bench, and worked even when his temperature shot up. The doctor advised him to leave the shop but he refused for there was no one to take his place. Nor did he leave his job until the last part in the batch he was working on was ready for the conveyor. Biting his lips from pain, he now dropped down on the stretcher and was carried out of the shop like a wounded soldier is carried from the battlefield.

There was a case at the Urals Heavy Machinery Works when a large press producing important aircraft parts went out of commission. Each hour threatened to cut the output of warplanes. To repair it, it was necessary to dismantle and do a welding job in one of the high-pressure cylinders, a job that would have required almost a week under ordinary conditions. A volunteer repair crew found another course. They disconnected the cylinder, increased pressure correspond-

ingly in the remaining ones. and began the repair job while the press was going. The cylinder had to be heated until it was almost red hot yet the volunteer workers entered the scorching inferno although each two-minute trick inside brought with it all the torments of being baked alive. True, they spent several days in hospital after this battle with heat, but the press did not stop for a single minute and the front received as many airplanes as the plan dictated.

Though frequent, these feats of valour are of course not the general rule. The rule is an almost incredible intensity of labour which will be found in every shop and mine. No matter how great the production, the more it is increased the better it is. Everyone knows that this hastens victory, and hence everyone does his utmost. There are factories in which each worker produces treble the quantity required by the established standards.

8. The number of women who have entered the Urals factories is exceedingly great. First and foremost the fact is an expression of their lofty patriotism. I had an opportunity to meet a girl who was doing work women had never done before. Her name is Sharunova and her job, that of blast furnace worker at Nizhni-Tagil. Her particular job requires physical strength, agility and endurance, not to mention the fact that it entails great responsibility. Yet she is considered one of the best workers at the plant. When I asked her why she selected such an arduous profession, she said it was not only the attraction of iron smelting that had made her do it, but mainly a desire to show other women that they could take over any man's job and thus spur more of them to enter industry. Her motives were social and her reasoning correct. The example she set did win followers.

9. Today every Urals factory has become a sort of an experimental laboratory. Discoveries and inventions follow

one another. This, as a matter of fact, is one of the mainsprings of the tremendous increase in productivity since the outbreak of war. Here is an enumeration of some of the innovations made during one year at the Urals Machinery Works alone.

Tool Production without any forging whatsoever was worked out and launched. This revolution in toolmaking both effects a saving of millions of roubles annually at the plant and frees a large number of machines for other work. Most important of all, it cuts production time to a fraction.

The use of wood gas for all manner of heat-treating processes is of first-rate significance, for the Urals has unlimited sources of the wood—needed for its production. The saving effected in more costly fuels is huge.

A new method of trimming castings has effected a great saving in labour and eliminated an entire department. Besides, the time required per casting has been sharply reduced.

As a result of the work done by the Academy of Science and a special commission of engineers, all technological processes requiring expenditure of electric power have been improved by introducing a number of ingenious inventions—reducing power consumption so much as to have the effect of the opening of a new 5,000—km. electric power station.

One could cite scores of other similar innovations at this plant. Like work is being conducted at all Urals enterprises, with not only scientists and engineers taking part in it but rank and file workers as well. The latter often produce exceedingly interesting inventions.

One can safely say that never has Soviet technique forced ahead so fast as during this war, and that the centre of this progress, is without a shadow of doubt, the Urals.

During the first year and a half of war, the workers, engineers and scientists of the Urals doubled industrial production. This was by no means accomplished by laying an excessive strain on the human element or by drawing on reserves accumulated before the war. On the contrary, the further this progress goes, the fewer are the difficulties on the way and the faster the growth of the territory's productive forces.

10. All Urals is now a construction site. New large plants, some of them comparable only to the gigantic Magnitogorsk works are going up with unprecedented speed, new power stations are being set up and already functioning, factories are building new shops and expanding existing ones. The boundless raw material resources of this "geologist's paradise", the enthusiasm of people forging arms for the defence of their country and unified, planned direction of this enormous industrial machine are the guarantee of future progress. To this testifies also the letter sent by the workers of Sverdlovsk Region to Joseph Stalin, summing industrial operations in the region during the first half of 1943. The letter reveals that from January to June the industry of Sverdlovsk Region made strides that put it well on the way to achieve the goal this year, which is to double the output. Some enterprises such as nickel, manganese and other works, exceeding even this, at first sight fantastic rate of development.

WAR BRINGS IMPETUS TO INDUSTRY

1. Rapid increase in production.
2. All-round progress.
3. Huge output drive.
4. Rationalisation proposals.
5. Everything for the front.
6. Efficiency suggestions.

The year 1940 was a year of the new Socialist development in the national economy and of further advances made in industrial production. The lessons of the present conflict are important. From the technical point of view, this war is a war of motors—of motors in the air and on the ground. The success of both the sides depends on the number of motors possessed by each. The war industry of the capitalist countries and the U.S.A. have been reorganized.

1. The general indices of the increase in the level of production in the U.S.S.R. and the U.S.A. are as follows :—

	U.S.A.	U.S.S.R.
1929	100%	100%
1938	80%	415%
1939	98%	482%
1940	111%	534%

Only in 1940, when industry was put on a war-footing did the U.S.A. show an industrial increase of 11% while at the same time, the Soviet Union increased production 5.39 times. Technical equipment has increased and production largely intensified. There has been a steady growth in production in the U.S.S.R., in the 3 years of the Third Five-Year Plan. Industrial output during this period has increased

from 90 to 137 thousand million roubles, i.e. by 44% will be clear from the following table :—

Year	Total output in million	
		Roubles
1933	..	42,030
1934	..	50,477
1935	..	65,137
1936	..	80,929
1937	..	90,166
1938	..	100,375
1940	..	137,000

Another positive fact is that during the second half of 1940 *the quality of production markedly improved.*

There has been a 76% increase in the engineering industry, which is vital for the defence industry. The Russians were asked to bear in mind : ‘ If you don’t want any surprises, then don’t keep the production of armaments behind other material production.’

The output of the means of production during the year 1940 increased by 33.9 as compared with 1939 and 52% as compared with 1938. Such is the rate of production in the U.S.S.R. and it was accompanied by the reconstruction of industry, machine-building and equipment for the defence industry. The entire reproduction measures have been increased.

2. The capital investment in national economy in 1940 amounted to 38 thousand million roubles. During the three years of the Third Five-Year Plan the capital invested amounted to 108 thousand million roubles.

During this period 29,000 factories, mines, electrical power stations (not including industries of local importance) were put into operation while during the whole of the First

Five-Year Plan 15,000 enterprises were put into operation.

As compared with the First Five-Year Plan the Third Five-Year Plan during its first 3 years registered the following increase in production.

The coal mines have produced	51 million tons more coal.
The power stations	2400 „ kwts. „ power.
The cast iron	2100 „ tons „

There has been a steady improvement in the material welfare of the population with the increased production.

Important successes were achieved by Socialist agriculture on the basis of the further consolidation of the collective farming system. *The gross harvest of cereals of 1940 approaches seven million poods.* The gross harvest and yields of all other cultures—sugar beets, potatoes, fodder plants has also increased. Collective farms are successfully developing animal husbandry.

In the course of the first eleven months of 1940, 42,000 new cattle farms were organised in collective farms, the number of big-horned cattle has considerably increased while the number of pigs and sheep showed a particular growth.

The growth in the national income has been 29,000 million roubles, i.e. the national income has increased from 99 thousand million roubles in 1937 to 128 million roubles in 1940.

The national income of the U.S.S.R. increased from 21,000 million roubles in 1913 to 128,000 million roubles in 1940, or the rate of increase was as follows :—

NATIONAL INCOME (In millions of roubles)

1913 .. 21,000	1929 .. 28,900	1933 .. 48,500
1937 .. 99,000	1938 .. 105,000	1940 .. 128,000

Thus despite the military operations on the borders of the Soviet Union at the end of 1939 and the beginning of 1940, the national economy made great progress and continued the increased rate of growth.

3. Labour productivity in industry has risen considerably in the past twelve months since the high output competition was launched in response to Stalin's order of the Day on May 1st 1942.

Initiated by iron and steel workers and aircraft and tank makers, this production drive swept the entire country, embracing millions of workers in all branches of industry. According to latest data, labour productivity has risen in the aircraft industry by 30% as compared with April 1942 ; the tank industry, 38% ; armaments plants 15% ; electrical industry, 27%. It likewise rose notably in the oil metals and chemical industries.

The production drive, in which millions vied to gain first place for their plant, department or crew, was accompanied by an unprecedented display of inventiveness and ingenuity on the part of the workers and engineering personnel. There has been a big influx of proposals and inventions improving production processes and organization of labour, and for economizing raw materials, supplies and fuel.

4. Some 24,000 rationalization proposals and inventions were submitted in the course of six months by workers at munitions plants. The application of but one-third of these suggestions resulted in a saving of 259 million roubles and an economy of thousands of tons of iron and steel and non-ferrous metals.

One of the manifestations of the production drive was the widespread formation of "frontline crews". Motivated by the desire to do their utmost in boosting the production of armaments, workers who joined these crews consider themselves soldiers who stuck to their job for days if need be until they filled urgent orders for the front. First started in the Urals, these brigades later made their appearances at many factories and mills. The Stalin Auto Plant in Moscow has 642 such brigades.

Like in former production drives, one of the main features in the present countryside movement is the friendly help rendered by the experienced workers to their less skilled shop-mates. In war time, with the influx of women and youth into industry this aid has assumed special significance and has been instrumental in helping the newcomers speedily acquire proficiency.

At present the countryside production drive is entering a new phase, as workers in different fields, in response to Stalin's call for redoubled effort, are pledging to boost output still higher. Once again the iron and steel workers of Kuznetsk, Siberia, started the ball rolling, by challenging all other plants to produce more metal for the front. Magnitogorsk, the giant Urals iron and steel mills, has taken up the challenge.

More and more munitions works, aircraft factories and other industrial establishments report overfulfilment of production programmes and the delivery of telling quantities of armaments and other supplies to the special fund of the High Command that is made up of production turned out in excess of the State plan.

Concrete pledges for higher output continue to pile up, indicating the determination of the country's soldiers of industry to provide an evermounting stream of tanks, planes, armaments and munitions for the Red Army.

5. At present the workers in the Soviet rear, from factory director to the youngest apprentice, are fired by a single thought expressed in the slogan : "*Everything for the front, everything for victory !*" Inspired by the lofty aims of the war for freedom and independence waged by their country, both the people in the rear and the soldiers and officers in the army see their supreme task of the moment in defeating the enemy—by fire and bayonet at the front and by selfless labour in the rear.

Wherever one looks in the Soviet rear, one witnesses the heroic efforts of Soviet soldiers of industry. They look upon their jobs as posts entrusted to them in battle.

Despite the many difficulties resulting from the war, workers are not stinting effort in order to produce more today than yesterday and to turn out from month to month ever greater quantities of aircraft, tanks, guns, munitions, clothing and food. Today there is no branch of industry in the Soviet Union that is not constantly increasing the rate of its output.

The Soviet aircraft industry produced 75% more airplanes in 1942 than the year before, and in the first quarter of this year the rate of increase was still greater. The enterprises of the mortar industry turned out in December 1942 twice as much as in January of the same year, while shipyards increased their production by two and a half times in the same period.

Hatred for the enemy and the will to victory have given rise to a powerful sweep of patriotism throughout the country,

tapping inexhaustible reservoirs of energy and enthusiasm, which has been vividly reflected in the rapid development since the outbreak of war of the high-output competition organized and led by the trade unions.

Hundreds of thousands of industrial "*assault troopers*"—workers who regularly exceed their output quotas—have come to the fore in the course of this production drive. Despite the great influx of new workers, all trade unions have recorded during the year 1942 a substantial rise in the proportion of these topnotchers to the total employed. For instance, the percentage of workers who exceed their plans in the aircraft workers' union has risen from 38.5% last year to about 55% now. The machine-tool workers' union reports that more than half of the workers it embraces, regularly top their production quotas.

Overfulfilment of quotas has begun more and more often to run to substantial proportions. In the heavy machinery, for example, already in December 1942 every fifth worker doubled or trebled his quota.

These are people who in the full sense of the word have the right to consider themselves frontliners holding advanced positions. They regard their shop as a sector of the front. As a matter of fact, they often call themselves members of "*frontline brigades*," of which there are thousands in our plants. It is not rare for them to deny themselves rest and to continue to exert every effort at the machine until the current engagement in the battle of production has been won.

6. An important role in the substantial rise in labour productivity and the increase in output achieved by Soviet industry has been played by the *thousands of efficiency proposals* that constantly pour in from both workers and engineers. These

rationalization suggestions are saving tens of millions of roubles of State funds, thousands of tons of precious raw materials, and giving industry the equivalent of hundreds of new machine tools.

At one aircraft works alone, these efficiency suggestions and inventions yielded an economy of 3,500,000 roubles in the first quarter of 1943, as much as was saved by this means in the course of the whole year of 1942. Another plant, an ordnance works, during April 1943 alone saved 1,700,000 roubles by the introduction of efficiency ideas emanating from the personnel.

The men and women of Soviet industry, while reviewing on May Day of 1943 what they themselves have done for victory, follow with the greatest of interest the successes of the mighty machinery of production set up by the other belligerent nations and the efforts the workers of the other countries are putting in.

SOVIET INDUSTRY STANDS THE TEST OF WAR

BY

MIKHAIL KALININ

1. Difficult task achieved.
2. Highly talented experts.
3. Living economic organism.
4. Able to withstand the test.

Mikhail Kalinin, President of the Supreme Soviet in the course of his speech on 26th Anniversary of the Socialist Revolution in November 6, 1943 referring to the industrial strength of the U.S.S.R. and how it stood the test in war-time recalled the words of Stalin who said :—

“The past year (1942) marked a turn not only in the progress of hostilities, but also in the work of our rear. We were no longer confronted with such tasks as evacuating enterprises to the east and converting the industry to production of armaments. The Soviet State now has an efficient and rapidly expanding war economy.”

And it is a fact that in this period our people have put not a little effort and labour into expanding production and further perfecting armaments. And we are able to record big achievements. The Red Army, as Comrade Stalin said, has received an uninterrupted supply of munitions of war.

And Comrade Stalin, both as the head of the Government and as the Supreme Commander-in-Chief of our armed forces,

was able to declare with gratification, "The selfless labour of the Soviet people in the rear will go down in history along with the heroic struggle of the Red Army as an unexampled feat of a people in defence of their motherland."

It is a common knowledge that our industry is the child of Stalin. It has developed along the lines marked out by Comrade Stalin. And those achievements, which our industry has been able to show in wartime; have a history which we are able to follow from the very outbreak of the war by a perusal of Comrade Stalin's public utterances.

In his very first statement, radio broadcast of July 3rd, 1941, Comrade Stalin called upon the Soviet people to intensify the efforts of all our plants and produce more rifles, machine-guns, artillery, bullets, shells and aircraft. Four months later, in his speech on the occasion of the 24th Anniversary of the great October Socialist Revolution, Comrade Stalin again reminded our workers and office employees, men and women, that they must work with might and main in the factories and produce ever greater quantities of armaments and equipments. A year later (1942) Comrade Stalin stated that one of the most difficult tasks of wartime—that of shifting the base of our industry to the eastern regions—had been accomplished. Workers had been installed in their new places; mills and factories, working for the armed forces, had been equipped; labour and discipline in the rear had been fortified and the industry was already working satisfactorily, honestly and punctiliously—supplying the Red Army with armaments it needed.

Under the conditions of wartime, our industry has coped with gigantic organizational difficulties, and has, from month to month, improved output and satisfied the ever increasing needs of our army.

2. *The question arises : from what sources does our industry derive the strength which is enabling us to cope with the problem of supplying the armed forces with everything they need ; and where does it find technically trained people and highly talented experts ? We have raised this question because it is being asked by the foreign press : by Allied press with a ' please ' ; by neutral press with astonishment and by the German press with literally an outcry of fury.*

Who did not know about the building of the Magnitogorsk combinat ; Urals machine building works and Kuznetsk combinat ; Chelyabinsk and Stalingrad tractor plants and the harvester combine works of Saratov and Rosiov ? Who did not know of the building of entire cities which sprang up in these years, such as Magnitogorsk and Komsomolsk, the erection of blast furnaces and other plants in the Donbas and the Ukraine ?

The achievement of our industry are unquestionable. They have been tried and tested in the furnace of the war. They were determined, by Stalin's methods, to create and develop our industry.

The development of Soviet industry was an all-round development. The Government, the Party and Comrade Stalin strove, if we may put it so, to provide our State with everything necessary for industrial activity.

And we built not only steel mills and war plants, but also giants like Barnaul, Tashkent and other spinning and weaving mills and developed the Cherchik factory in Uzbekistan which manufactures nitrogen for fertilising our cotton fields. Each of our republics has created its own industry for the satisfaction of the requirements of its own population. All this is apart from the industries under All-Union control.

And how many meat packing plants, fish and canning plants and diverse plants for working up agricultural produce etcetera, have, indeed been built in our country !

3. Our war industry was not a foreign body but a living economic organism of the country ; it was surrounded by the civilian industry and vast potential. The solicitude shown by the Soviet Government for training highly-skilled personnel is common knowledge. Our Government spared no expense to train workers and raise their qualifications. Our workers passed through the stage of initial training on first class machines and mastered complex technological processes. The State took upon itself the task of training new contingents of skilled workers for which purpose a large number of trade schools and factory schools were started.

Everybody is familiar with Comrade Stalin's appeal to youth to master science and technical thought. This appeal did not go unanswered. We know that hundreds of higher educational establishments—universities and colleges—trained cadres of new experts day in and day out. This was a costly process, but in return we now have fully qualified cadres in all the branches of national economy and especially in industry. We have always said that we are ready to learn and borrow from the best which the world science has to offer.

And now in this furious conflict in which we are locked with Germany, two species, two forms of leadership of the industry have come into collision.

4. *And, without bragging, we may say that the advantage is on the side of our industry. Even today, in this arduous struggle when a large part of our territory is occupied by the enemy and our industrial enterprises*

have been destroyed, we have the strength and capacity to develop and to perfect our industry and rehabilitate the ruined cities and villages.

The best proof of our *creative efforts* have not been suspended. It is a fact that during the war we have put into operation immense new plants,—such as the Chelyabinsk steel mills, aluminium works in Siberia and the Altai tractor plant,—that in Central Asia we have undertaken the Farhad development project with its great power stations and metallurgical works ; that we have laid railways of great length and in Moscow have completed the third section of the subway. *Creative development, in one degree or the other, is going on in every republic and every town ; and, in some republics—Central Asiatic for example—it has assumed gigantic dimensions.*

SUMMARY

1. In the U.S.S.R., land, its natural deposits, waters, forests, mills, factories, mines, rail, water and air transport, banks, post, telegraph, and telephones, large State organised agricultural enterprises, municipal enterprises, such as dwelling houses in the cities and industrial localities are all State property, that is to say they belong to the whole people and are administered by State bodies with a scientifically worked out plan. The product and profits of these enterprises go into the coffers of the State which uses them for economic development and for improvement of the conditions of the population. For this reason periods of crisis are unknown and impossible in the U.S.S.R. The national income is entirely at the disposal of the working people and their State. The Constitution of the U.S.S.R. guarantees the right to work, rest and leisure, education, and maintenance during sickness, incapacitation and old age. The cost of all these amenities is borne either by the State or the factories or the trade unions. There is no direct taxation in the Soviet Union.

The Soviet Union is the only country in the world where planned economy reigns supreme and is developing at a rate unparalleled by any other country in the world.

All the nations and races of the U.S.S.R., irrespective of their past or present condition, and irrespective of their numbers, enjoy fully equal rights in all spheres of economic, public, political and cultural activity. Any direct or indirect restriction of the rights of, or, conversely any establishment of direct or indirect privileges for, citizens on account of their

race or nationality, as well as any advocacy of racial or national exclusiveness or hatred and contempt, is punishable by law.

The citizens of the U.S.S.R. are guaranteed by law :

- (1) Freedom of speech,
- (2) Freedom of the press,
- (3) Freedom of assembly, including holding of mass meetings and
- (4) Freedom of street processions and demonstrations.

2. EDUCATION.—Doors to knowledge and advancement stand wide open to everyone.

- (1) Liquidation of illiteracy—an accomplished fact.
- (2) Universal free and compulsory elementary education.
- (3) Establishment of institutions for Higher Learning.
- (4) Establishment of institutions for agriculture, sciences, economics, engineering, technical training, geology, etc.
- (5) Mass technical training.
- (6) Mass training for skilled workers.
- (7) Factory Trade Schools with general education and for training some particular trade.
- (8) Newspapers, books, and periodicals, etc. are so priced as to be within the reach of every Soviet citizen.
- (9) A village without a library is a rarity today.
- (10) In Tzarist time there were 73% and in some parts 98% illiterates.

3. **AGRICULTURE.**—In Tzarist time most of the Russian peasants were very poor, starved, illiterate and superstitious. Most of the land belonged to the Tzar's family, monasteries, landlords and kulaks. Thirty per cent of the peasants had no horses, 34% no implements and their ploughs and harrows were wooden. Today the Soviet farmer leads the world in large-scale mechanised agriculture.

- (1) Collectivisation of farms.
- (2) Tillage and harvesting by machines supplied by the Machine and Tractor Stations provided by the State.
- (3) The agricultural machines and tools are made in the country today.
- (4) Farm hands are well looked after.
- (5) Soil is unsurpassed in fertility.
- (6) Agricultural Research Stations are established for the betterment of the crops, cattle, poultry, pigs, sheep, horses, etc.

4. **INDUSTRY.**—Industry is nationalised.

Establishment of—

- (1) electric power stations.
- (2) heavy industries.
- (3) chemical industries.
- (4) synthetic rubber industries.
- (5) non-ferrous metallurgy.
- (6) automobile, tractor, harvester combine, aircraft, precision instruments and machine-building industries, etc.

5. **NATURAL RESOURCES.**—These are immense, but the majority of them were undiscovered in the time of the Tzar. The first thing the Soviet Government did was to start geological surveys for which they brought experts from abroad while their own people were being trained. Today there are plenty of first class geological experts amongst the Russian people.

(1) Minerals—

- (1) Ferrous ores.
- (2) Copper.
- (3) Lead.
- (4) Zinc.
- (5) Chromite.
- (6) Manganese.
- (7) Bauxite—Aluminium.
- (8) Gold.

(2) Coal.

(3) Timber.

(4) Oil.

(5) Chemical deposits—potassium salts, apatite, etc.

Geology is held in high esteem by the Soviet Government as a science which can contribute largely to the welfare and prosperity of the population.

6. **COMMUNICATIONS.**—Development of—

(1) Railways.

(2) Waterways.

(3) Roads.

(4) Airways.

Soviet Russia is the only country in Europe that has highest number of airways for commercial and passenger transport service.

7. **LABOUR.**—Labour is well looked after by the State in every way. Women have equal rights with men in all spheres of life. Wages are paid either in kind or cash, but according to the quantity and quality. The more one produces the more he receives. Wages are fully guaranteed irrespective of whether the given undertaking is working at a profit or a loss. There is no unemployment.

8. **DEBT.**—Soviet Union has no foreign debt. It always meets its current obligations with utmost punctuality. This is due to the growth of gold industry and also, ofcourse, to the controlled economy. There is, however, no reference to the last point in the articles selected for the purpose of this book.

NATIONAL GROWTH RESULTING FROM FIVE-YEAR PLANS

APPENDIX I

Economic and Cultural Growth

National Economy

CAPITAL INVESTMENT

(in billion roubles in prices of corresponding years.)

Five Years' before planning.			
1924-1928	..	..	11.1
The First Five-Year Plan			
1929-1932	..	..	52.1
The Second Five-Year Plan			
1933-1937	..	..	155.4

NATIONAL GROWTH (MAIN FACTORS)

	1913	1940	Increase per cent.	or fold
Industrial Production (per cent.)	100	{ 908 (1938)		
National Income (billion roubles)	21	125	495.0	6.0
Budget Expenditure (million ..)	{ 6,670 (1928)	173,259	2,497.6	26.0
Electrical power (billion KW. Hrs.)	1.9	{ 39.6 (1938)	1,984.2	21.0
Capacity of Electrical Stations (KW.)*	Power .. 1.1	{ 8.1 (1937)		
Coal (million tons)	.. 29	164.6	468	7.5
Oil and Gas (million tons)	.. 9.2	34.2	271.7	3.7
Steel (million tons)	.. 42	184	338	4.4
Machine tools	.. 1,500	48,500	3,133.3	32.3
Railway Engines	.. 418	1,620	287.6	3.6
Freight Cars	.. 14,800	67,400	355.4	4.6
Tractors	.. Nil	52,500		
Grain (million centners)	.. 801	1,195	49.2	1.4
Raw Cotton (million centners)	7.4	25.2	240.5	3.5

*For more details on electrification see page 391.

	1913	1940	Increase per cent	or fold
Beet Sugar (millions tons) ..	10.9	21.8	100.0	2.3
Cattle (million head) ..	51.3	63.2 { 1938)	23.2	1.2
Population (millions) ..	139	193	39	1.4
Workers and employees (millions)	11.2	30.4	171.4	2.7
Institutions (for care of women and infants) ..	9	4,388 { (1937)	48,655.6	487.5
Hospital beds in (thousands) ..	175	840	380	4.8
Books (millions) ..	86	701	715	8.2
Theatres ..	159	825	439.2	5.2
Museums	180	761 { (1938)	322.8	4.2
Literacy (per cent) ..	28.10	81.70	189.3	2.9
Education—attendance at primary and secondary schools (millions)	7.8	35	348.8	4.5
Higher education (thousands) ..	112	620	453.6	5.5

PRODUCTION OF LARGESCALE INDUSTRY

(in billion roubles in invariable prices of 1926-27)

Year.	Consumers' goods.	Producers' goods.	Total.
1913 ..	6.3	4.7	11.0
1917 ..	3.2	3.7	6.9
1920 ..	0.8	0.9	1.7
1925 ..	Upward trend begins almost equalling the position in 1917 but still less than in 1913.		
1928* ..	9.0	7.8	16.8
1932 ..	17.2	21.7	38.9
1937 ..	36.9	53.3	90.2

* (After 1928, Russia has never looked back any year; figures for 1932-37 being specified.)

From the above figures it will be clear that U.S.S.R. took about 7 years to reach nearly the same level of output and development of 1913 as the Soviet Regime started functioning in 1921 after the civil war came to an end. The real progress was, therefore, made since 1928 when the first Five-Year Plan was inaugurated.

APPENDIX II

Socialisation of National Economy

	Private Sector		Socialist Sector	
	1928	1937	1928	1937
	%	%	%	%
National income	56	0.9	440	99.1
Gross output of total industry ..	17.6	0.02	82.4	99.8
Gross output of agriculture ..	96.7	1.4	3.3	98.6
Retail trade turnover	23.6	..	76.4	100%

APPENDIX III

Production of Consumer's Goods

(in billion roubles in invariable prices of 1926-27).

1913 — 6.3

1937 — 36.9

(in million roubles in invariable prices of 1926-27)

	1913	1928	1937
Wool	316	535	1,091
Cotton	1,876	2,742	5,147
Linen	168	208	461
Knitted goods	17	172	1,396
Sewing	28	449	3,158
Boot & Shoe	65	273	1,539
Granulated Sugar (in thousand tons)	1,347	..	2,421
Confectionery	70	..	921
Cigarettes (in billions)	22	..	89
Canned goods (in million cans of 400 grams each)	93	..	1,372

APPENDIX IV

Agriculture

AGRICULTURAL ECONOMY

	1928	1937
State farms	1,407	3,992
Average annual number of workers (thousands) ..	316.8	1,500
Tractors (thousands)	6.7	84.5
Capacity of the whole tractor park (thousand H.P.)	776	1,600
Sowing area (million hectares)	1.7	12.2
Large horned cattle (thousands)	180	3,700
Gross production (in invariable prices of 1926-27 in million roubles.)	230	1800.0
Grain supply for the State (in thousand tons)	{ 391 (1929)	4,100

The number of harvest-combines in State farms in 1937 reached 24,000.

Sown Areas (in million Hectares)

	1913	1937
The whole sown area	105.0	135.8
Grain crops area	94.4	104.4
Area under truck garden crops and potatoes	3.8	9.0
Technical crops area	4.6	11.2
Forage crops area	2.1	10.6

APPENDIX V

Rail, River, Sea and Air Transport

Railway Transport		1913	1937	
Freight (in million tons)	132.4	517.3		
Passengers (in millions)	184.8	1,142.7		
Length of railroad (in thousand kilometers)	58.5	84.9		
	1929	1937		
Sea Transport (in million tons) ..	8.5	29.4		
River Transport	1928	1937		
Freight (in millions tons)	18.4	66.9		
Passengers (millions)	17.8	65.2		
Air Traffic	1923	1928	1932	1937
Extent of airlines (in 1000 kms.) ..	0.4	9.3	31.9	105.6
Conveyance of goods (in thousand tons)	0.0	0.1	0.4	38.0
Conveyance of mail (in thousand tons) ..	0.0	0.1	0.4	9.4

APPENDIX VI

Class Composition of the Population

	Tsarist Russia 1913	U.S.S.R. 1937
Bourgeoisie (Landlords, big & small urban bourgeoisie, tradesman) ..	3.6	nil
Kulaks	12.3	nil
Working population	16.7	34.7
Individual peasants	65.1	5.6
Collective farmers	nil	55.5
Other sections of the population	2.3%	4.2

AVERAGE ANNUAL WAGE OF WORKERS AND EMPLOYEES.

(in roubles)	
1924-25	450
1937	3,047.

WORKERS AND EMPLOYEES (Population, 170,500,000 in 1939) (millions).

1913	..	..	..	11.4
1925	..	..	..	8.5
1928	..	..	..	12.2
1932	..	..	..	22.9
1937	..	..	..	27.0

In 1928 there were in the U.S.S.R. 1,576,000 unemployed. In 1931 unemployment was completely liquidated and does not exist any more.

TECHNICAL TRAINING OF WORKERS IN INDUSTRY (October, 1, 1936)

			Passed the State technical Examination.	Engaged in technical study.
			%	%
Large-scale industry	..	..	40	24
Coal industry	..	..	56	18
Iron and steel industry	..	..	53	28
Metal working and building	..	..	42	27
Cotton manufacture	..	..	52	21

WORKERS BENEFITING BY SANATORIUMS AND REST HOMES

The number of workers and employees who received free passes.
(in thousands).

			Sanatoriums	Rest Homes
1927-28	..	..	74.2	437.2
1938	..	..	555.0	1,900.0

PHYSICAL CULTURE AND SPORTS

The number of physical culturists who have received badges for
passing the standard sport tests (in thousands).

			Men.	Women	Total
1938	..	..	429	36	465
1938	..	..	4,468	510	4,978

APPENDIX VII

Education

CHILDREN AND YOUTH IN GENERAL EDUCATION SCHOOLS

Number of pupils in millions.

		1914-15	1927-28	1937-38
Elementary education	..	7.3	9.9	20.8
Secondary education	..	0.6	1.5	8.6
Total	..	7.9	11.4	29.4

STUDENTS IN GENERAL EDUCATION SCHOOLS

(In millions)

	1914-15		1937-38	
	Towns	Rural localities	Towns	Rural localities
Elementary education ..	1.2	6.1	5.2	15.6
Secondary education ..	0.6	0.01	3.4	5.2
Total	1.8	6.1	8.6	20.8

TOTAL NUMBER OF STUDENTS (in millions)

	1914		1937-38	
Elementary education (1-4 classes)	7.3	20.8
Secondary education (general and special)	0.7	10.5
Higher education	0.1	0.55
Courses and schools for training workers and for tuition of specialists by correspondence	nil	5.9
Schools and courses for elementary instruction of adults	nil	7.5
Total	8.1	45.3

In 1937, out of every 1,000 inhabitants 268 were studying.

STUDENTS IN TECHNICAL SCHOOLS AND SCHOOLS OF APPRENTICESHIP.

(In thousands)

	1914	1937-38
Schools of apprenticeship graduating skilled workers	93.2	224.3
Technical schools and other special middle schools	35.8	862.5

SPECIALISTS GRADUATED (in thousands)
(in 2 Five-Year Plan periods)

	1929-32		1933-37
Higher education institutions	170.0
Special middle schools	291.2
			369.9
			623.0

NUMBER OF ENGINEERS AND TECHNICAL WORKERS IN LARGE-SCALE INDUSTRY (in thousands.)

1925	..	..	62.2
1928	..	..	92.1
1930	..	..	112.6
1933	..	..	376.6
1937	..	..	604.2

STUDENTS IN UNIVERSITIES. (in thousands)

1914-15	..	..	112.0
1927-28	..	..	168.5
1932-33	..	..	504.4
1937-38	..	..	550.0

PROVISIONS OF STIPENDS FOR STUDENTS

Percentage of students who were receiving State stipends in the course of 1938.

Students of special middle schools	...	85.3%
Students in universities and colleges	..	91.0%

In all, State stipends were being received in the course of 1938 by 1,126,000 students of universities and colleges and of special middle schools.

INSTITUTES FOR SCIENTIFIC RESEARCH

	1929	1938
Institutes	438	806
Scientific Workers	22,600	35,600

PUBLICATIONS

	1913	1937
Number of newspapers	859	8,521
Circulation (in million)	2.7	36.2
Books (" ")	86.7	637.5

THEATRES

1914	153
1938	702

Classification (1938)

Opera	29
Drama	318
Musical comedy	23
Theatres for young spectators	119
Theatres of Collective and State Farms..	213
Total	702

Note :—Theatres in the U.S.S.R. work in 47 languages.

MUSEUMS

1914	180
1938 (Jan. 1.)	761

Classification (1938).

Historical	126
Regional	390
Technical	71
Natural Science	44
Fine Arts	66
Public Health	38
Others	26
Total	761

APPENDIX VIII

Women

WOMEN IN NATIONAL ECONOMIC RECONSTRUCTION

Workers and employees (in millions).

1929	..	..	..	3.3
1932	..	..	..	6.0
1933	..	..	..	6.9
1937	..	..	..	9.4

PERCENTAGE OF WOMEN IN TOTAL NUMBER OF WORKERS AND EMPLOYEES

		1929	1937
National economy as a whole	..	27.2	35.4
Large-scale industry	..	27.9	39.8
Transport	..	8.0	18.3
Education	..	53.6	57.0
Public health	..	64.6	72.0

PERCENTAGE OF WOMEN WORKERS AND EMPLOYEES IN VARIOUS BRANCHES OF NATIONAL ECONOMY TO TOTAL NUMBER OF WOMEN WORKERS AND EMPLOYEES

		1897	1937
Industry and Building	..	13	40
Education and Public Health	..	4	21
Agricultural Proletariat	..	25	nil
Servants and Charwomen	..	55	2
Transport, Trade, Public Catering	..	nil	15
State Farms, Machine and Tractor Stations and other Agricultural Enterprises	..	nil	6
State and Public Institutions	..	nil	6
Others	..	3	10

The data for 1897 contain among "Others" a small number of women working in transport, trade and State institutions. In the data for 1937 these categories are removed from "Others."

WOMEN STUDENTS.

	1928	1938
	Men. Women	Men. Women
	% %	% %
Higher Educational Institutions..	71.9 28.1	56.9 43.1
Technical and Other Special		
Middle Schools ..	62.4 37.6	48.4 51.6
Workers' Faculties ..	84.4 15.6	64.8 35.2

WOMEN TEACHERS OF ELEMENTARY AND MIDDLE SCHOOLS.

(Percentage of total number of teachers).

	Cities.				Rural Localities.			
	1927		1935		1927		1935	
	Men	Women	Men	Women	Men	Women	Men	Women
Classes I-IV ..	18.7	81.3	9.8	90.2	38.4	61.6	32.1	67.9
Classes V-X ..	56.4	43.6	40.2	59.8	71.7	28.3	58.9	41.1

WOMEN ENGINEERS AND TECHNICAL WORKERS IN LARGESCALE INDUSTRY

Percentage of total number of engineers and technical workers						(in thousands)
1914	..	..	..	..	..	(Single instances)
1933	9.5	..	..	..	..	35.8
1937	16.2	..	..	..	..	97.9

WOMEN SCIENTIFIC WORKERS IN THE INSTITUTES OF SCIENTIFIC RESEARCH

Percentage of total number of scientific workers.						in thousands
1914	..	..	..	..	..	(single instances)
1929	22.8	..	..	..	..	5.1
1938	34.0	..	..	..	..	12.1

WOMEN PHYSICIANS

Percentage of total number of physicians.						(in thousands.)
1914	9.7	..	..	..	..	1.9
1931	44.9	..	..	..	..	30
1938	50.6	..	..	..	..	53.4

WOMEN IN COLLECTIVE FARMS

Participation of women in farming work (average performance of workday units per farmstead.)

	Men		Women	
1936	..	242	135	(35.8%)
1937	..	276	163	(37.1%)

Note :—The workday unit is a unit of rate and calculation of the quantity and quality of the collective farmer's labour in the collective farming work.

WOMEN IN LEADING POSITIONS IN COLLECTIVE FARMS.

Categories of functionaries.	Percentage of women in 1936
Members of administration	18
Managers of livestock farms	16
Brigadiers of livestock brigades	22
Heads of brigade divisions	67
Directrices of clubs	11
Agronomists of machine and tractor stations	10

APPENDIX IX

Mother and Child

From the very inception of the Soviet power, care of the mother and child has been one of the prime considerations of the government. Soviet women, enjoying equal rights with men in all the phases of cultural, social and public life, have a right of work, education and of provision in case of illness and old age, as have all the citizens of the U.S.S.R. This right is guaranteed by the Constitution of the U.S.S.R.

MEDICAL PROPHYLACTIC INSTITUTIONS FOR PROTECTION OF MOTHER AND CHILD

- | | |
|---|--|
| 1. Medical consultation at the institutions for protection of mother and child. | 11. Seasonal creches in collective and State farms. |
| 2. Rest homes for pregnant women. | 12. Milk dietetic kitchens. |
| 3. Maternity homes in towns. | 13. Health playgrounds and play groups. |
| 4. Maternity homes in collective farms. | 14. Rooms for suckling infants in factories and institutions. |
| 5. Maternity sections in hospitals of towns and rural localities. | 15. Separate apartments for mother and child in the transport system (rooms at railway stations, special cars, cabins, etc.) |
| 6. Obstetric centres. | 16. Rest homes for mother and child. |
| 7. Homes for mother and child. | 17. Sanatoriums for young children. |
| 8. Homes for babies. | |
| 9. Town creches. | |
| 10. Permanent creches in collective and State farms. | |

The State expenditure for the care of mother and child are continually mounting. In 1936 the State expended for this purpose two milliards roubles; in 1941 over four milliards. The State aid to the mothers of many children amounts to two milliards roubles annually. In the U.S.S.R., 300,000 mothers receive State aid averaging from two to five thousand roubles each.

CRECHES FOR CHILDREN.

The creches have helped the Soviet women to combine maternal duties with active work in the social fields. The rise in the creches is recorded as follows :

Beds in permanent creches

1914 —550 ; 1929—56,066 ; 1936—616,000 ; 1938—723,651 ;
1941—854,000.

In addition to permanent creches, a large number of seasonal and transportable creches is opened by the rural authorities during the period of farming and other seasonal work.

Beds in seasonal and transportable creches numbered over four millions
in 1941.

APPENDIX X

Soviet Constitution

The highest organ of State authority and organs of State administration of the Union of Soviet Socialist Republics comprise of the **Supreme Soviet of the U.S.S.R.** consisting of **Soviet of the Union** and the **Soviet of Nationalities** each of which has three bodies made up of its members, namely :

- (a) **Legislative Bills Commission ;**
- (b) **Foreign Affairs Commission ;**
- (c) **Budget Commission ;**

Under the Supreme Soviet of the U.S.S.R. is the Supreme Court of the U.S.S.R. and the Procurator of the U.S.S.R. together with the **Presidium of the Supreme Soviet of the U.S.S.R.** consisting of one President, 11 Vice-Presidents, Secretary and 24 members.

These three bodies make up each of the executive.

The Body next in importance to the Supreme Soviet is the **Council of People's Commissars** which works through the following commissions :—

- (1) **State Planning Commission ;**
- (2) **State Control Commission ;**
- (3) **State Bank ;**
- (4) **Committee of Fine Arts and Higher Education.**

In addition, under the Council of People's Commissars work :

(1) All-Union Peoples Commissariats consisting of:

Defence,	Ammunitions,	Armaments,
Foreign Affairs,	Electric Stations &	Heavy Machine
Foreign Trade,	Electrical Industry,	Building Industry,
Railways,	Iron & Steel Industry,	Medium Machine
Post, Telegraph &	Nonferrous Metallurgy,	Building Industry,
Telephones,	Chemical Industry,	General Machine,
Water Transport,	Aircraft Industry,	Building Industry.
Fuel Industry,	Shipbuilding Industry,	Navy,
		Agricultural Stocks.

(2) The Union-Republican Commissariats consisting of :

Fish	Light Industry,	Building Materials Industry,
Meat & Dairy Industry,	Timber Industry,	Trade,
Food Industry,	Agriculture,	Finance,
Textile Industry,	State Grain & Livestock Farms,	Internal Affairs,
		Justice,
		Public Health.

SCHEME OF ELECTIONS TO THE SUPREME SOVIET OF THE U.S.S.R.

The Soviet of the Union has 569 deputies on the basis of one deputy for over 300,000 of the population. The Soviet of Nationalities has 574 deputies consisting of :

- 275 deputies from 11 Union Republics, 25 from each,
- 242 deputies from 22 Autonomous Republics, 11 from each,
- 45 deputies from 9 Autonomous Regions, 5 from each,
- 12 deputies from 12 National Areas, 1 from each.

PRINCIPAL NATIONAL COMPOSITION OF THE SOVIET OF NATIONALITIES.

Russians	141	Byelorussians	15	Mari	6
Ukrainians	36	Jews	15	Abkhazians	6
Georgians	34	Tajiks	14	Kara-Kalpaks	6
Azerbaijanians,	33	Germans	10	Bashkirs	5
Armenians	30	Kalmyks	9	Chechens	5
Uzbeks	28	Ossetians	9	Mordovians	5
Kazakhs	24	Komis	9	Moldavians	5
Kirghiz	17	Buryats	8	Karelians	5
Tatars	16	Udmurts	7		
Turkmens	15	Yakuts	7		

Thirty-one other nationalities, making 59 in all, are represented in the Soviet of Nationalities.

According to the Soviet Constitution amended recently five more Republics have been added to the Soviet Union, making in all 16.

Further, these Republics have been granted Autonomous Status enabling them to have their own Army Units, Foreign Commissars, Diplomatic Representatives abroad and representation at the International Conferences.

Electrification

(Ref: Note on page 379)

The amount of electrical energy produced by all the electrical stations of Russia in 1913 is less than the production of the single Dnieper hydraulic power station in Kichkas in 1937. In Russia, electrical stations work in four ways, i.e.:

- (1) Hydraulic power
- (2) Coal
- (3) Brown coal
- (4) Peat

The following is the analysis of the source of electrical power in Russia (1938):—

Peat station	5
Brown coal station	4
Coal station	6
Hydraulic station	2

It is interesting to note that within a short distance of the famous hydraulic station near the mouth of the Dnieper are three coal electrical stations one of which is situated on the Dnieper itself, and the other one is near the mouth of the dam. Similarly, the second hydraulic station in the north has not far from it two stations working with peat one of which is at Leningrad. Round about the source of the Volga and other rivers of Russia, there are five electrical stations, three of which work with peat and two with brown coal. There is of course a coal station at Magnitogorsk and another at Stalinsk. Of the remaining three, one is a coal station and two are worked with brown coal.

